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Training on Common Military Messages

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14. ABSTRACT *(Maximum 200 words)*: The experiment examined what inexperienced Soldiers learned from a computer-based training program on four common Army messages: Spot Report, nuclear/biological/chemical, call for fire, and medical evacuation. It also examined the ability of Soldiers to complete tactical messages based on hypothetical combat scenarios and a prototype digital interface for the Land Warrior (LW) system. The message training focused on the doctrinal requirements for messages, not how to use the software interface. Soldiers (n = 48) were from the Infantry One Station Unit Training course. The findings showed that inexperienced Soldiers have limited knowledge of common Army messages. Although the Soldiers learned from the message training, the doctrinal training per se was shown to be a necessary, but not a sufficient condition for determining appropriate message content in hypothetical tactical situations. Soldiers also need training on digital message formats and menu selections, must possess the requisite military knowledge and experience, and have the ability to understand the battlefield situation and integrate critical elements of information. Additional research is needed on the types and length of training needed to prepare Soldiers to generate appropriate military messages.

15. SUBJECT TERMS Military messages, Spot Report, Call for Fire, MEDEVAC, NBC-1, Digital Systems, Computer-based training, Land Warrior, Infantry, One Station Unit Training, Military experience, Message format

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FOREWORD

The fielding of digital systems in the Army has generated additional training requirements. Many digital systems incorporate messages, orders, overlays, maps, and other electronic features. In research with prototype versions of the Land Warrior (LW) system, the Infantry Forces Research Unit of the U.S. Army Research Institute for the Behavioral and Social Sciences identified the need for Soldiers to have doctrinal training on messages, combat orders, graphic control symbols, and map reading, as the system assumed all Soldiers had this knowledge. However, current training for Soldiers at some skill levels does not include this information. The Project Manager-Soldier Electronics/Land Warrior (PM-SE/LW) funded ARI's development of computer-based training in each of these domains. This multi-media training will be given to units prior to fielding of the LW system. The research presented in this report examined what Soldiers learned from the message lessons within the prerequisite skills training program, as well as the ability of Soldiers to complete tactical messages based on hypothetical combat situations.

The research involved training on combat-related messages with Soldiers who had just entered the Army. This particular target audience has the least military experience of all the LW users. The findings showed that inexperienced Soldiers have limited knowledge of common Army messages, thus reinforcing the need to provide doctrinal training on messages. Although Soldiers learned from the training, the training was shown to be a necessary, but not a sufficient condition, for determining appropriate message content in hypothetical tactical situations. Military experience, an ability to interpret battlefield actions, and an understanding of the menu choices in digital message formats are also needed.

The findings were briefed to the Commandant U.S. Army Infantry School (USAIS) and the PM-SE/LW on 12 May 2003. They were also presented earlier to the Assistant Commandant, USAIS on 23 April, the Commander, 29th Infantry Regiment on 19 March 2003, the TRADOC Systems Manager-Soldier on 3 March 2003, and the Director, Directorate of Operations and Training on 23 February 2003. The findings have important implications for future training regarding what needs to be trained on digital systems, how the identified requirements are trained, and what challenges inexperienced Soldiers may have in employing advanced digital features in combat situations.

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The authors thank those who helped support this project. The Project Manager – Soldier Electronics/Land Warrior funded the development of the prerequisite training interactive multi-media courseware. Personnel from Northrop Grumman Mission Systems created the prerequisite interactive multi-media training courseware on military messages, as well as the combat-related test scenarios.

TRAINING ON COMMON MILITARY MESSAGES

EXECUTIVE SUMMARY

Research Requirement:

Messages are integrated in most of the Army's digital systems. Sending a digital message requires knowledge of the purpose of the message and what it must contain, an understanding of the tactical situation, and skill in operating the digital interface. Currently Soldiers have little training on messages during their initial training, despite the fact that many digital systems are distributed at the individual Soldier level. The research described in this report examined what inexperienced Soldiers learned from a computer-based training program on four common Army messages. It also examined the ability of Soldiers to complete tactical messages based on hypothetical combat situations and a prototype digital interface for the Land Warrior (LW) system.

Procedure:

Soldiers (n = 48) from Infantry One Station Unit Training (OSUT) were randomly assigned to two conditions. In one condition they received lessons on four messages, which included a pretest and a final exam. Then they took an application exercise requiring them to use a static mock-up of the LW interface and to indicate what they would include in different messages. In the second condition, the sequence was reversed. The message lessons were based on current Army doctrine. Soldiers were not trained on how to use the LW interface, nor the meaning of all the terms displayed in the LW interface menu fields. The message questions in the application exercise were based on hypothetical combat situations. All lessons, tests, and exercises were computer-based.

Findings:

There were no differences between the two experimental conditions on each of the three tests: the message pretest, the message final exam, and the application exercise. The results did show that Soldiers learned from the message training, and that questions on Spot Report were the easiest. An item analyses of the application exercise showed that training on message content was not sufficient. Soldiers needed instruction tailored to the terms in the drop-down menus as well as additional military experience and knowledge (e.g., combat vehicles) to correctly interpret the hypothetical combat situations in the application exercise.

Utilization of Findings:

The findings showed that inexperienced Soldiers have limited knowledge of Army messages, thus reinforcing the need to provide the necessary doctrinal training before using a digital message interface in any tactical system. A primary lesson learned from the research is that it is easy to make erroneous assumptions regarding the skills, knowledge and experience required to employ digital systems for some Soldier populations. Often message training on "digital systems" means training on the mechanical use of software interfaces, "learning the switches" so to speak. The findings show that other skills and knowledge are critical on the battlefield. Doctrinal knowledge is required. The terms used in digital message formats must be understood and their scope of application known. Yet training on doctrinal knowledge plus expertise in using a software interface is not sufficient. Also essential are military knowledge and experience, and the ability to understand the battlefield situation and integrate critical elements of information. Additional research is needed on the types and length of training needed to prepare Soldiers for the complexities of sending messages in combat.

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Introduction

The fielding of digital communication systems in the Army means that Soldiers at many echelons have access to information that was previously limited to higher levels of command. For example, combat orders and overlays can now be disseminated digitally to the squad leader level and below. Previously, orders were typically given orally to platoon leaders and squad leaders with a simple sketch of the operations overlay. Now such information can be disseminated in a more formal and detailed mode to all Soldiers, if required or desired. In addition, in some instances Soldiers at lower levels of command are now empowered to send information that was previously initiated and sent from higher levels.

Consequently, digital communications have generated new training requirements. Soldiers must have some familiarity and training with concepts and procedures that are currently taught above their skill level. One system, but not the only one, where such requirements exist is the future Land Warrior (LW) system. With the version of this system used during the Joint Contingency Force Advanced Warfighting Experiment (JCF AWE) in 2000 (Dyer et al., 2000), four areas were identified in which Soldiers required additional instruction prior to training on the actual LW system. These four areas were: messages, map reading, combat orders, and graphic control symbols. In general, Soldiers in their first or second terms of enlistment needed training in all areas. Officers and senior noncommissioned officers needed less training, although specific knowledge gaps existed for some.

To address this training need, computer-based training (CBT) modules were developed by the Infantry Forces Research Unit of the Army Research Institute (ARI) for these four areas (ARI, 2003). The content for the CBT modules was based on Army training and doctrine publications (Department of the Army [DA], 1996, 1997, 1998, 2000, 2001). Since the training constituted prerequisite skills and knowledge, the modules did not encompass how to use the LW software interface per se. The training modules included lessons with practical exercises and "thinking-ahead" type questions. The "thinking-ahead" questions required Soldiers to figure out the answer to a question prior to having been taught the concept or fact addressed by the question. These questions were also used to maintain Soldier interest and activity. In a prior CBT experiment (Singh, Clark, & Dyer, 2003), 92% of the Soldiers indicated they liked this technique and recommended retaining it.

The major topics in the prerequisite training program were as follows. The message training covered four common messages: Spot Report, call for fire (CFF), medical evacuation (MEDEVAC), and the basic nuclear, biological and chemical report (i.e., NBC-1). For map reading, the critical topics were: colors and topographic symbols, directions and azimuths, terrain features and overhead imagery (to include satellite imagery), map scales, and grid coordinates (to include ten-digit grids). Combat order training included the five-paragraph field order, warning order (WARNO), operations order (OPORD), and fragmentary order (FRAGO). The graphic control symbol training included unit symbols, plus about 40 commonly used symbols in overlays such as support by fire position, attack position, engagement area, objective, assembly area, and minefields.

Purpose

The research described here involved only messages. One purpose of the research was to determine what entry-level Soldiers learned about the common tactical battlefield messages from a CBT approach. The training in the prerequisite skills program (ARI, 2003) covered the purpose and the required elements of each message, according to current Army doctrine.

The second purpose of the research was to examine Soldier's ability to complete tactical messages in a digital format based on the Soldier's understanding of hypothetical combat situations. The digital formats were based on LW message screens. The questions required interpretation by the Soldier regarding what information should be sent, as well as an understanding of the menu-selections embedded in the LW message screens. It was expected that Soldiers who had instruction on messages would score higher on the questions that primarily required knowledge of message content. However, no formal expectations were made about the questions whose answers depended on additional cognitive skills and knowledge.

Messages

This section summarizes the content of the four messages covered in the training, and illustrates the scope of each message. These messages are used to communicate information about enemy activity (Spot Report and NBC-1), to request fire on the enemy (CFF), and to report the casualty status of friendly and other battlefield personnel (MEDEVAC).

Spot report. The Spot Report, sometimes known as SALUTE (Size, Activity, Location, Unit, Time, Equipment), is the basic message used to report enemy activity. The observer should report as much information as possible regarding what is seen. The Spot Report has six elements that must be reported.

- Size refers to the number of personnel or major items of equipment observed or the size of an object or area.
- Activity refers to what the enemy was doing or circumstances observed.
- Location refers to the grid coordinates of the activity, or reference from a known point including the distance and direction (azimuth) from the known point.
- Unit refers to any distinctive patches, clothing, signs or symbols, or to identification numbers displayed on vehicles or equipment.
- Time is the time the activity or circumstances were observed.
- Equipment involves all equipment associated with the activity or circumstances.

CFF. The call-for-fire (CFF) message is used to call indirect fire (artillery and mortars) on an enemy location. It has four elements.

- Observer identification tells the fire support unit who is requesting the mission.
- The warning order clears the net for the fire mission, tells the type of mission, and states the method of locating the target. The warning order tells how the target is being engaged: by adjusting fires, suppression, or fire-for-effect. Adjust fire is given when the observer is uncertain of the location of the target and is prepared to provide

corrections to the target. Suppression is given to bring quick fires on or near the target to disrupt and cause it to take cover or move. Fire-for-effect is given when the observer is certain of the location of the target and requires no adjustment.

- The third element is target location. Three methods may be used for target location. The first is the grid coordinates of six digits or more, or a known reference point. Second is polar, which requires the observer to provide his own location, and give a direction and distance to the target. Third is shift-from-a-known-point, where the observer provides a direction to the target, and lateral or range shifts to the target from a known point.
- The fourth element is a description of target and activity. This should provide what the target is (e.g. number of personnel, types of equipment), and what the target is doing (e.g. attacking, dug in, moving, size and shape of target).

NBC-1. The NBC-1 (nuclear, biological and chemical) report relays critical information about a nuclear, biological or chemical attack. It has the following five elements.

- Location of the observer, which is normally given as grid coordinates.
- Azimuth or direction of the attack location from the observer's position, normally given in degrees.
- Date and time the attack started
- Location of the attack, normally given as grid coordinates.
- Type of attack – nuclear, biological, chemical. The observer should provide type of burst, if nuclear (air, surface or unknown). The observer should give the type of agent and height of burst, if known, for biological/chemical.

MEDEVAC. The MEDEVAC (medical evacuation) message informs medical personnel about the nature and location of casualties. The MEDEVAC message has nine elements and thus is often known as the "nine-line" MEDEVAC.

- Line 1 provides the location of the pickup site. This is the grid coordinate for the site to the nearest 100 meters.
- Line 2 provides the radio frequency and call sign for the unit or individual to be contacted at the pickup site.
- Line 3 contains the number of patients by precedence. This is determined by the unit medic or senior person present and can be any of the following: urgent, priority, and routine.
- Line 4 describes any special equipment required such as hoists, forest or jungle penetrators, semi-rigid litters or other devices required to extract or move wounded.
- Line 5 specifies the number of patients by type; the number of litter patients (those who must remain on a stretcher) and the number of ambulatory patients (those able to walk and sit).
- Line 6 describes the security at the pickup site. This provides the enemy situation (e.g., the enemy is in the area, approach with caution).
- Line 7 specifies the method of marking the pickup site. This may be color panels, colored smoke, signal lights, open flames, etc.

- Line 8 describes the patient nationality and status. This includes the category of wounded to be transported: US military, US civilian, non-US military, non-US civilian, and/or enemy prisoner of war).
- Line 9 indicates NBC contamination, if any.

Method

Participants

Soldiers (n = 48) from the Infantry One Station Unit Training (OSUT) at Ft. Benning, GA participated. The Soldiers were in the 12th week of the 14-week OSUT course.

Experimental Design and Procedure

Soldiers were randomly assigned to one of two experimental conditions. In one condition, they first took the CBT message modules, which included a pretest, four message lessons (one lesson per message type), and a final exam. Then they were administered an application exercise requiring them to use a static mock-up of version 1.0 of the LW message interface, and to complete parts of a message based on a hypothetical combat situation. This condition is labeled "Train-ApEx," referring to training followed by an application exercise.

In the second condition, labeled "ApEx-Train," the sequence was reversed. Soldiers took the application exercise without any prior training on messages, and then received all the CBT message modules (pretest, four lessons, and final exam). In the ApEx-Train condition, Soldiers had to answer application exercise questions prior to formal message training. These two conditions are outlined in Table 1.

In the application exercise, Soldiers were presented a hypothetical battlefield situation. They were then given several questions about this situation. The questions required knowledge of the particular message to be sent. As mentioned previously, Soldiers also had to interpret the battlefield scenario and to make the appropriate menu selection from the LW message screen. Thus the application exercise went beyond mere knowledge of messages. No training was provided in the application exercise; it constituted a test.

Version 1.0 of the LW message software was menu-based. There were no free-text fields. To complete a message in the application exercise, Soldiers selected the phrase or term in a drop-down menu that best described what was observed or requested. The CBT on messages did not include any instruction on the LW menu choices, the menu fields, and their meaning.

Half the Soldiers participated in the experiment in a morning session, and the other half in an afternoon session. In each session, Soldiers were randomly assigned to the two experimental conditions. The experiment was conducted in a multi-media room in the Infantry School, which housed 24 computers. The message training and application software programs were loaded on these computers prior to the experiment.

Table 1
Experimental Conditions

Train-ApEx	ApEx-Train
Message Training Pretest Introduction • Spot Report • CFF • NBC-1 Report • MEDEVAC Request Final Exam	**Application Exercise** Hypothetical combat scenarios followed by questions on sending digital messages
Application Exercise Hypothetical combat scenarios followed by questions on sending digital messages	**Message Training** Pretest Introduction • Spot Report • CFF • NBC-1 Report • MEDEVAC Requests Final Exam

Soldiers were briefed on the purpose of the experiment. They were told how to access the experimental software, and how to select the training sequence they each would use, based on a code attached to their computer monitor. Soldiers progressed at their own rate. Research personnel were available to respond to questions and to troubleshoot computer problems. A survey (Appendix A) was administered as each Soldier completed the experiment.

Message Training

The message training modules are shown in the menu in Figure 1. The Soldiers first took a pretest, followed by a short introduction to the four types of messages. The Soldiers then had to complete all four lessons, but could select them in any order. The training concluded with a final exam, which differed from the pretest.

The differences between the pretest and the final exam resulted from the structure of the entire prerequisite training program. The prerequisite training program was designed to address gaps in knowledge in four domains. It was assumed that only those Soldiers in units who lacked prerequisite knowledge in a specific domain needed the corresponding training. Consequently, the pretests were designed as diagnostic tests. It was also assumed that if Soldiers scored very high on a pretest (at least 90% correct), they had a good knowledge of that specific domain and did not need to take the associated training, although they were encouraged to do so if they so desired. On the other hand, the final exams in the prerequisite training program were designed as

comprehensive tests of each domain covered in the training, and as a check on whether the Soldiers who did not meet the pretest criterion of 90% correct had learned the desired material.

In the experiment reported here, however, the pretest was not used a diagnostic test. Everyone was required to take the message pretest, the message training, and the message final exam.

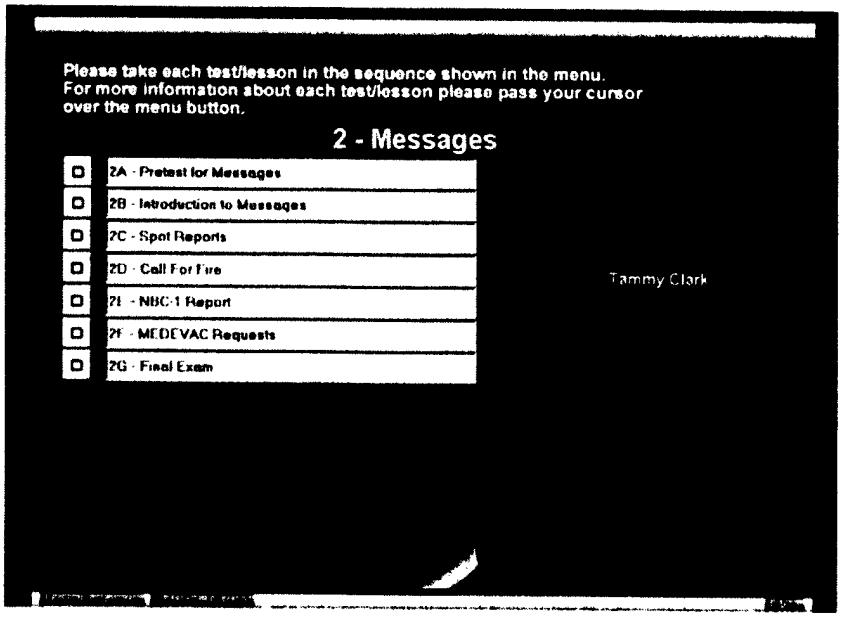


Figure 1. Message training menu.

The lesson for a specific message started with screens that explained the purpose of the message and were intended to motivate the Soldier. For example, in the Spot Report lesson, one of the initial screens stressed that the Soldier himself was the most versatile, flexible collector of combat information and intelligence. This screen is shown in Figure 2.

Figure 2. Example of motivation screen.

A formal definition of all elements of the message was included in each lesson. If the message was long or contained unfamiliar and/or technical concepts, additional screens were devoted to explaining these points and providing illustrations. Figure 3 shows the "definition" screen for Spot Report.

Figure 3. Spot Report definition screen.

Soldiers had two types of practice exercises. One exercise format presented a hypothetical situation, and asked Soldiers to think about and write down what they should report about the situation. The situation was highly structured, and the screens displayed the information the soldiers needed to incorporate in the message. Soldiers were not scored on their response. The next instructional screens presented what they should have recorded. Figure 4 illustrates this type of exercise in the CFF lesson.

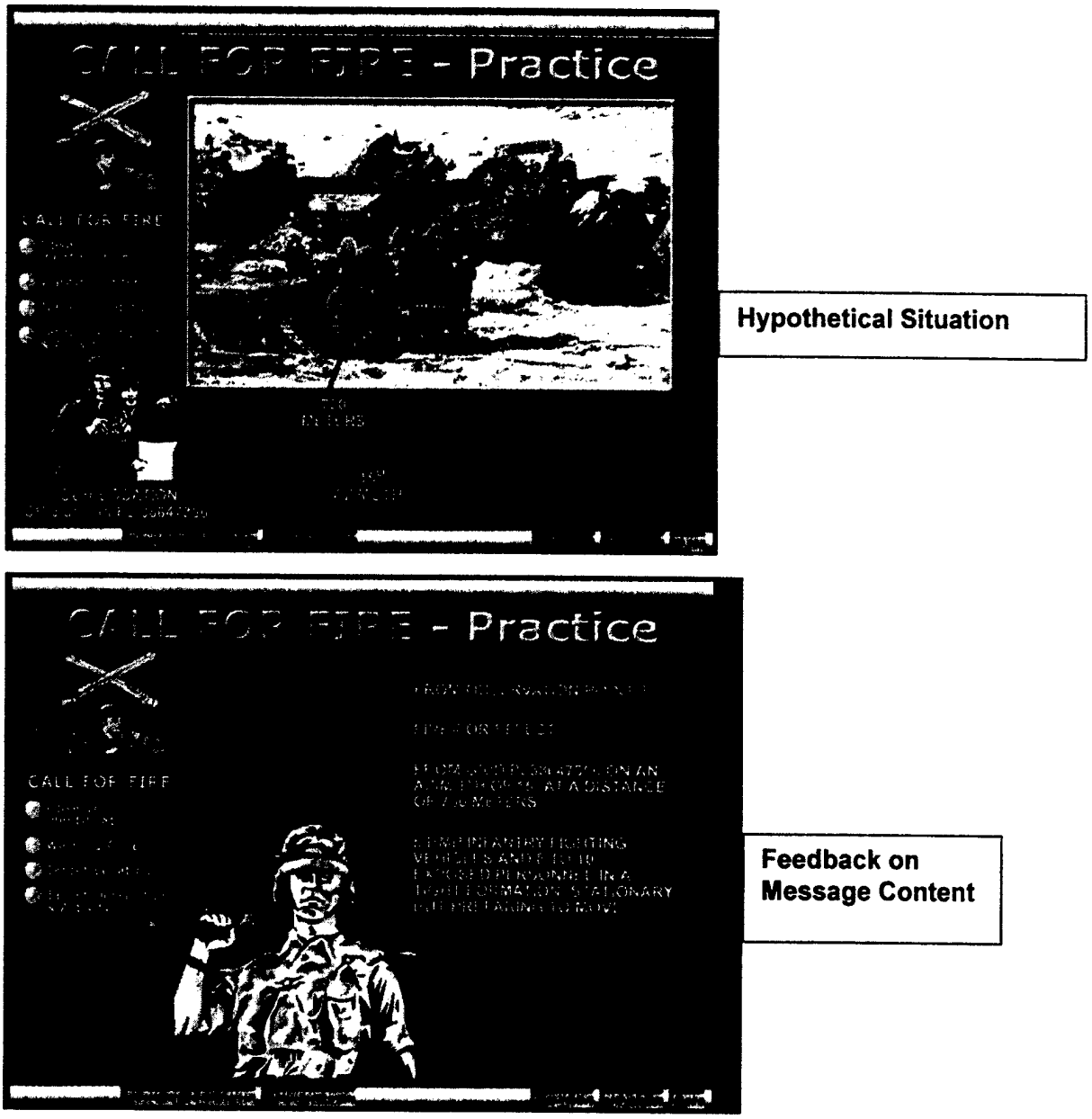


Figure 4. A CFF practice exercise – a hypothetical situation and feedback on what the CFF message should contain.

The second type of practice exercise presented an actual message. The Soldier was asked to identify what key item of information was missing. Figure 5 illustrates this type of exercise. Corrective feedback, which identified the missing element and also showed the corrected and complete message, was presented after the Soldier made the selection.

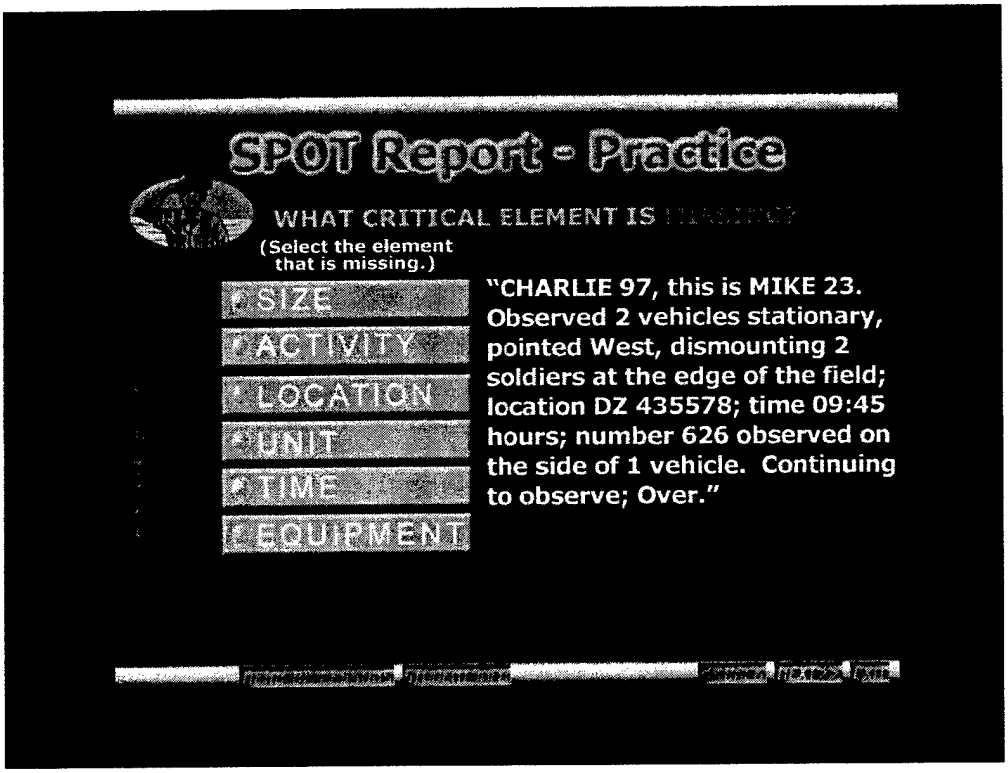
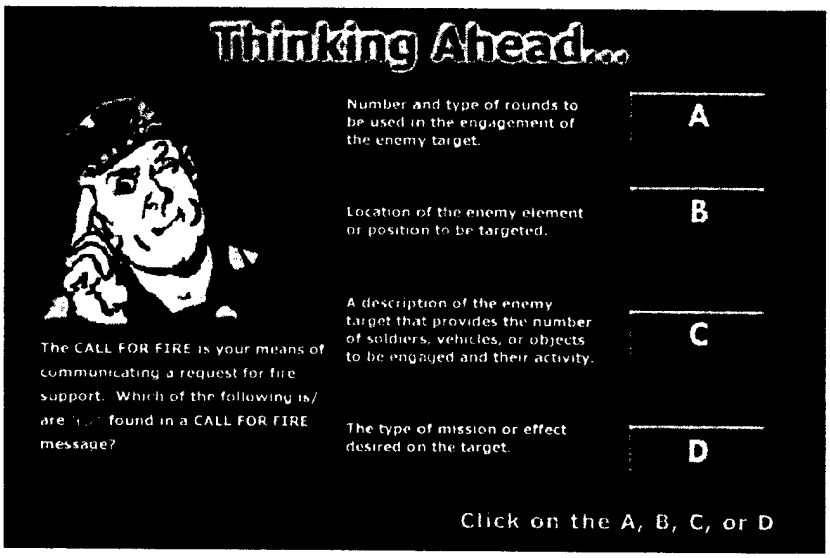


Figure 5. A Spot Report practice exercise - identify the missing element.

The technique of "thinking-ahead" questions was implemented in all lessons. Each lesson contained one thinking-ahead question in the first part of the lesson. These questions required Soldiers to rationalize the answer to a question prior to being taught that particular point. Feedback was provided immediately after the Soldier answered the question. The questions were also used to maintain Soldiers' interest and activity, and to challenge them to think about the material. Two "thinking-ahead" questions are shown in Figure 6.

Each lesson concluded with a short review of the key elements of each message. In addition, Soldiers could re-examine any of the instruction.

In summary, each lesson began with an introduction to the message followed by a "thinking-ahead" question. Instruction on the elements of the message itself was next. Soldiers had two types of exercises on determining what content they would report, based on a hypothetical battlefield situation. The first type of exercise question required them to think of how they would complete the entire message. They were not scored on their response, but were shown a completed message. The second type required Soldiers to identify a critical missing element from a hypothetical message. Soldiers were scored on their response. Regardless of the response, they were shown the corrected and complete message. The last phase of the lesson was a review of the message content.



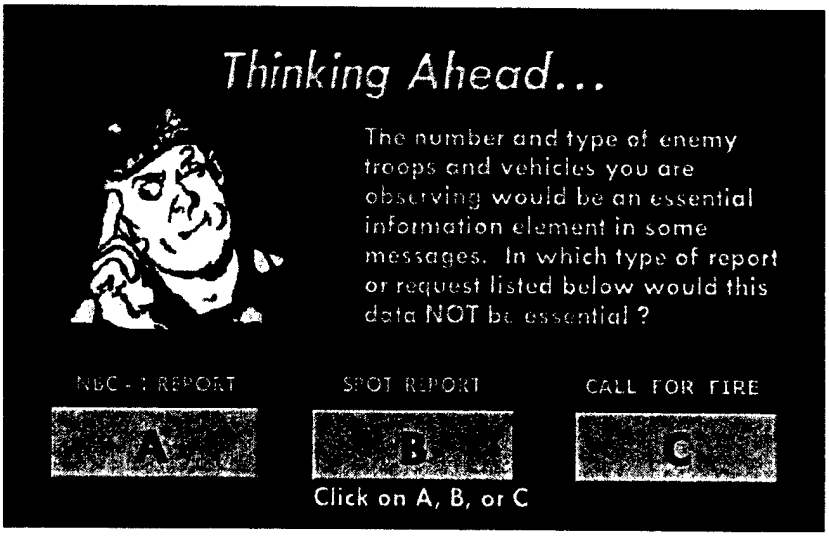


Figure 6. Examples of "thinking-ahead" questions.

Application Exercise

As stated previously, the application exercise was a test, not training. Soldiers were not provided instruction on any message, nor did they receive corrective feedback on any of their responses. The application exercise was designed to see how well Soldiers could answer questions regarding messages using the message formats as presented in version 1.0 of the LW

system and hypothetical battlefield situations. Since the application exercise was designed to be a "test," it is described more fully in the Measures section.

Criterion Measures

Pretest and final exam in the training program. Five types of questions were in the pretest and final exam. One type of question described a combat situation and asked which message (Spot, CFF, MEDEVAC, NBC-1) should be sent. This was labeled a "general" question. The second type presented a list of critical elements in a specific type of message, and required the Soldier to identify what was missing. This type of question required the Soldier to recall key parts of the instruction. The third type required Soldiers to apply their knowledge. They were presented a sample message, and required to identify what information was missing. The fourth type of question asked what specific information should be included in a message. The fifth type of question concentrated on comprehension. For example, Soldiers had to identify what was meant by the phrase "fire-for-effect" in a CFF message. Each type of question is illustrated in Table 2. Some questions are abbreviated for purposes of illustration.

The pretest had four general questions, as described above. In addition, there were four questions on Spot Report, five on CFF, four on NBC-1, and three on MEDEVAC for a total of 20 questions. The final exam had two general questions, six on Spot Report, six on CFF, seven on NBC-1, and eight on MEDEVAC for a total of 29 questions. As described previously, it differed from the pretest and was designed to be more difficult.

Soldiers were given their total score immediately after completing the pretest and the final exam, but were not provided feedback on individual questions, i.e., whether they answered each question correctly or incorrectly. As Soldiers took each test, their responses to the questions were automatically recorded in a database.

The questions in the pretest and final exam were coded for the degree of similarity. Four categories were used: identical, highly similar, moderately similar, and unique. Questions that were "highly similar" in the two tests had only a slight variation in one of the response options. Questions in the "moderately similar" category had different item stems (e.g., the content of the sample message differed somewhat) and/or one or two different response options.

Only three questions were identical on the pretest and the final exam. Eight items were highly similar, and three were moderately similar. The pretest and final exam both had unique questions. There were five unique questions on the pretest and 13 unique questions on the final exam. The similarity ratings for each item in the pretest are in Appendix B; similarity ratings for items in the final exam are in Appendix C.

Table 2
Examples of Questions in the Pretest and Final Exam

General Question	
	You and your buddy are manning a platoon observation and listening post. You observe the approach of a HIP helicopter and see 12 to 14 enemy Soldiers dismount and move into a tree line about 2,000 meters from your position. What type of message should you send? a. MEDEVAC request b. SITREP c. NBC-1 report d. Spot report
List of Elements – Identify Missing Element Question	
	What essential element of the call-for-fire is missing from the following list? The observer's identification Warning order Target location a. Estimated rounds required for adjustment b. Description of the target c. Types of rounds requested d. Frequency of the requesting unit
Example Message – Identify Missing Element Question	
	You were selected to relieve the platoon leader's RTO for two (2) hours. While monitoring the platoon and company nets, you receive the following message. *"Echo 94 this is Papa 72. Spot Report. Insertion of enemy forces at grid PM 695745 occurring now by HIND helicopters, gray uniforms with black berets and small arms observed. Over."* What essential element is missing to complete and forward this report? a. Date and time of the incident and/or duration of the activity b. The identification of the enemy units or forces involved on the ground and in the air. c. Actions being taken by the unit observing the insertion and casualties. d. Size of the force inserted, number of troops and number of helicopters involved
Specific Information Question	
	The MEDEVAC request includes detailed information on the casualty pickup site. The request should include the gird location of the site, ... and hazards in the area. What essential hazard information should be provided? a. The presence of telephone or electrical lines within 2 miles of the pickup site b. The assurance that all air defense weapons in the area are in a "weapons hold" status c. The absence or presence of hostile forces in the area d. The absence or presence of foreign nationals in the area
Comprehension Question	
	Artillery units are prepared to receive calls for fire from any Soldier on the battlefield. Certain terms, however, are used to let the fire support unit know the type of fires required. ... The term "fire-for-effect" tells the fire support unit that the observer: a. Wants the target completely destroyed b. Wants all rounds to be fired at once c. Is certain of the location of the target and no adjustment is required d. Is uncertain of the target location and wants fires over a wide area.

Application exercise. The application exercise required knowledge of messages and their required elements, the ability to interpret the meaning of combat scenarios and the images in the photographs used to illustrate the scenario, and an understanding of the concepts and terms used in the drop-down menus in the LW message formats. In general, the questions in the application exercise more closely approximated what would be required in combat than those in the prerequisite training. Also most questions in the application exercises were more difficult than those in the message pretest and final exam as the application questions focused on higher-level cognitive skills (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956; Marzano, 2001) as well as on knowledge of message elements.

In the application exercise, Soldiers were shown four photos of hypothetical combat scenes and a description of each situation. Figure 7 presents one of these situations. Each situation was followed by 4 to 11 questions covering the described situation with additional information provided in the question stem as needed. The questions required Soldiers to determine what to send in the digital message format for the particular situation that was presented. These digital formats were based on the LW software and were new to the Soldiers.

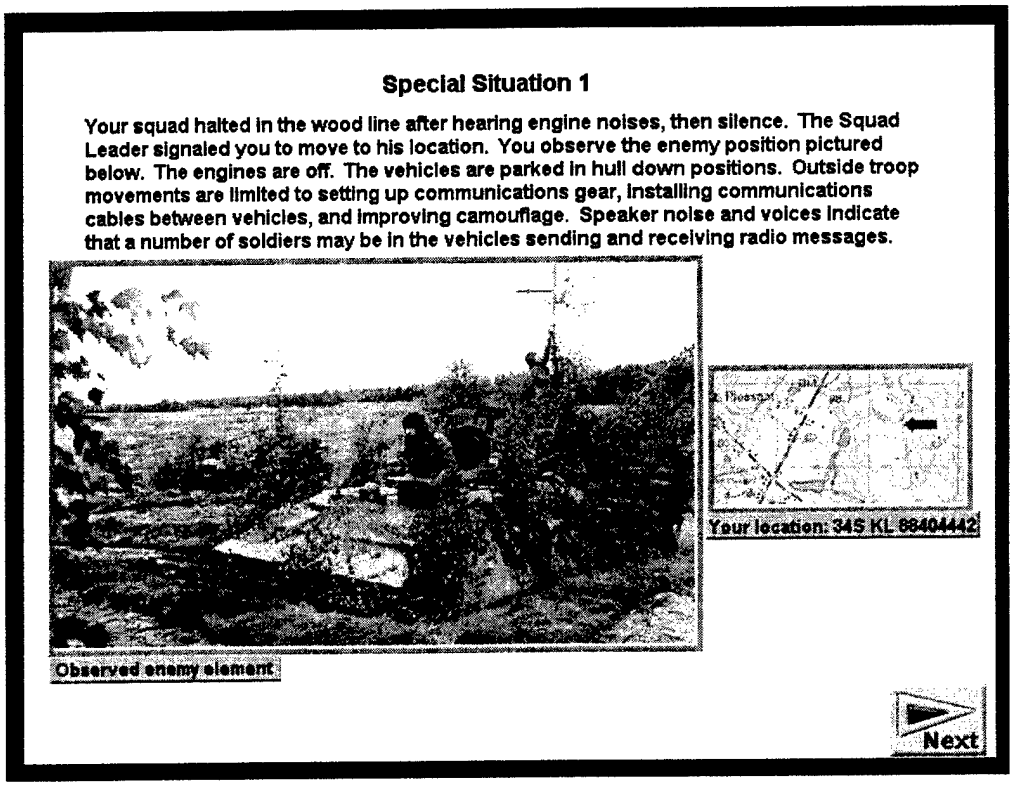


Figure 7. One hypothetical combat situation in the application exercise.

The digital message formats shown in the application exercise were the same as those in version 1.0 of the LW system. Spot Report, CFF and MEDEVAC message formats were used. There were no questions on NBC-1 messages. The formats for the three message types shown in

the questions were screen captures from the LW software. Thus the fields and field labels shown to the Soldiers were identical to what they would see if using the LW system in the field.

The application exercise had two general questions, ten Spot Report questions, ten CFF questions, and eight MEDEVAC questions for a total of 30 questions. In addition to message type, the questions were classified on two other dimensions.

The second dimension reflected the extent to which all the information necessary to answer the question was in the message training. Two individuals who knew the content of the message training described what skills and knowledge Soldiers needed to answer each question in the application exercise. These assessments were made independently and are summarized in Appendix D. From these assessments, three subcategories were derived to depict the relationship of each question to the message training. The first category included questions that Soldiers could answer based entirely on the message training; a total of six questions (20%). The second category included questions that Soldiers could answer by using the message training plus other skills or knowledge; a total of nine questions (30%). The third category included questions that could not be answered from the training; a total of 15 questions (50%). Examples of additional skills and knowledge required included such factors as whether the Soldiers had to know the function or type of vehicle shown in the picture, whether they needed to understand any new terms or concepts presented in the LW digital message format (field labels or menu selections), whether they had to understand tactical concepts presented in the situation, and whether the information required to answer the question was explicitly presented in the situation description itself. In summary, 80% of the questions on the application exercise required knowledge that was beyond the message training, higher-level cognitive skills, or both.

These three training-related categories are illustrated in Figures 8, 9, 10 and 11. Figure 8 (question 2) illustrates a question that could be answered from the training program. It requires knowledge of one of the message elements, equipment. Figures 9 and 10 illustrate questions that could not be answered from the training program. For example, with Question 3 in Figure 10 Soldiers must know the type of vehicle and its function, as shown in the picture and the description of the hypothetical combat situation. The picture (Figure 7) shows a BMP. In addition, they must know that a BMP is a type of armored personnel carrier (APC). Figure 11 illustrates a question that requires knowledge from the message training plus additional skills. For question 25 in Figure 11, Soldiers must read the description in the question carefully to infer that all Soldiers require a litter, and that no one is ambulatory.

The discrepancies between what was covered in the training and what was required in the application exercises also occurred because of other factors. First, there were differences in the fields used in the LW message format versus Army doctrine. Second, the menu selections listed in the LW menus were not explained as such in the training. The message training was designed to cover current doctrine on message purpose and requirements, not the specific LW message formats and menu options nor how these formats and options applied to a variety of combat situations. For example, the message training stated the Spot Report required a description of equipment observed and to be as detailed as possible. But the message training did not elaborate on possible ways of classifying equipment (tanks, armored personnel carriers, air defense artillery, etc.), terms and concepts that were used in digital drop-down menu formats.

The third dimension used to classify the questions was whether the Soldiers selected a menu field or an item from a menu, using the LW message format. This classification applied to only the questions that focused on specific messages, not the two general questions on message type. Appendix D cites the subcategory assigned to each question in the application exercise.

Figures 8 and 9 illustrate two of the seven field-selection items. All the response options referred to a name of a field in the LW message format, which was presented at the bottom of the screen. For example, the SALUTE report format, as shown in Figure 8, had 12 fields: Equipment 1 (Target), Equipment 2, Equipment 3, Quantity (3 fields each corresponding to an equipment field), Activity, Location, DTG, Now, Speed, and Course. The CFF format is shown in the lower half of Figure 9.

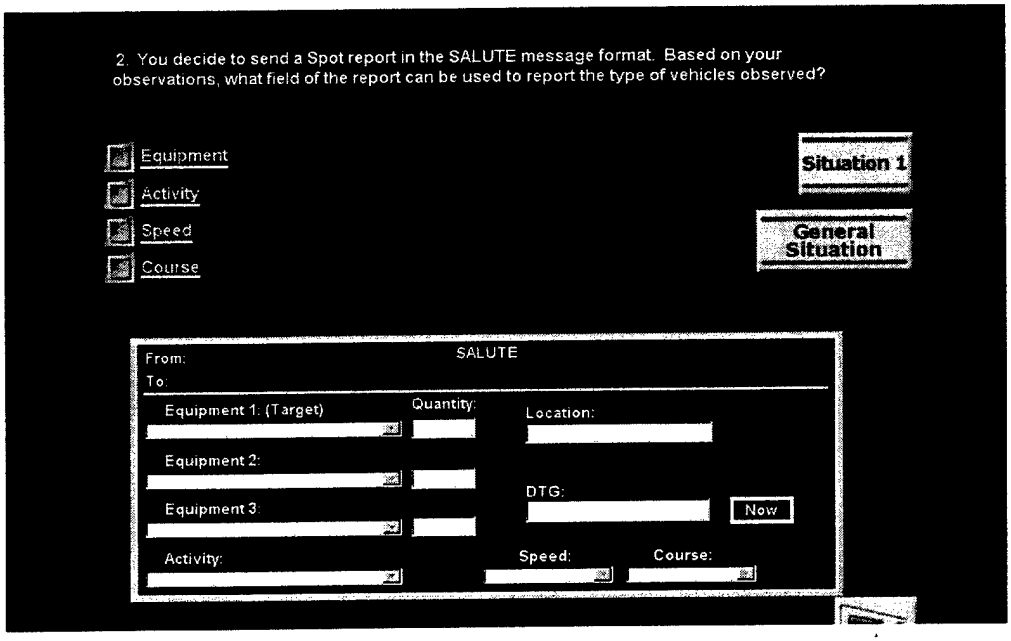


Figure 8. Example of a Spot Report (SALUTE format) question covered by the message training that required a field-selection response. [The question followed the hypothetical combat situation shown in Figure 7, and used the SALUTE message format in v1.0 of the LW software.]

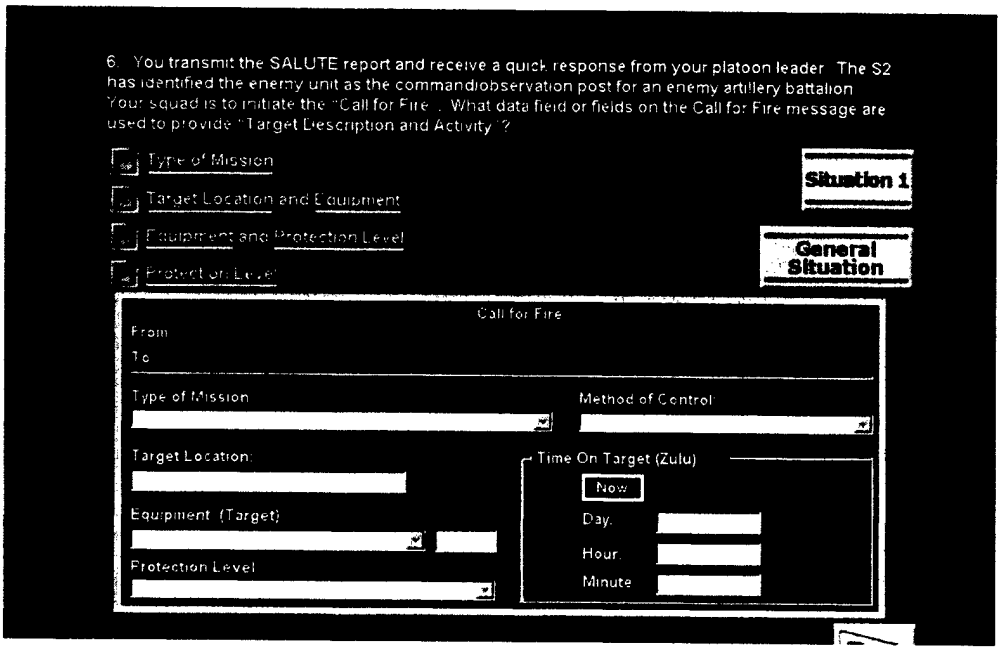


Figure 9. Example of a CFF question not covered by the message training that required a field-selection response. [The question followed the hypothetical combat situation shown in Figure 7 and used the CFF message format in v1.0 of the LW software.]

Figures 10 and 11 illustrate two of the 21 menu-item selection questions. Many message fields contained drop-down menus. With the LW system, as with other digital message formats in Army systems, Soldiers must determine which menu item is appropriate for a message. In the application exercises, menu choices in the application exercise were taken from the total list of choices provided in the LW software, and represented four reasonable responses given the hypothetical combat situation presented. For example, the drop-down menu for equipment in the LW Spot Report had nine items. When a question in the application exercise dealt with selecting the appropriate equipment for the Spot Report, the four equipment alternatives were drawn from the nine LW menu selections. Figure 10 illustrates this type of question for the Spot Report format. The same procedure was used to generate response alternatives for all other questions that required Soldiers to select items from a drop-down menu (e.g., activity, speed, and course fields in Spot Report).

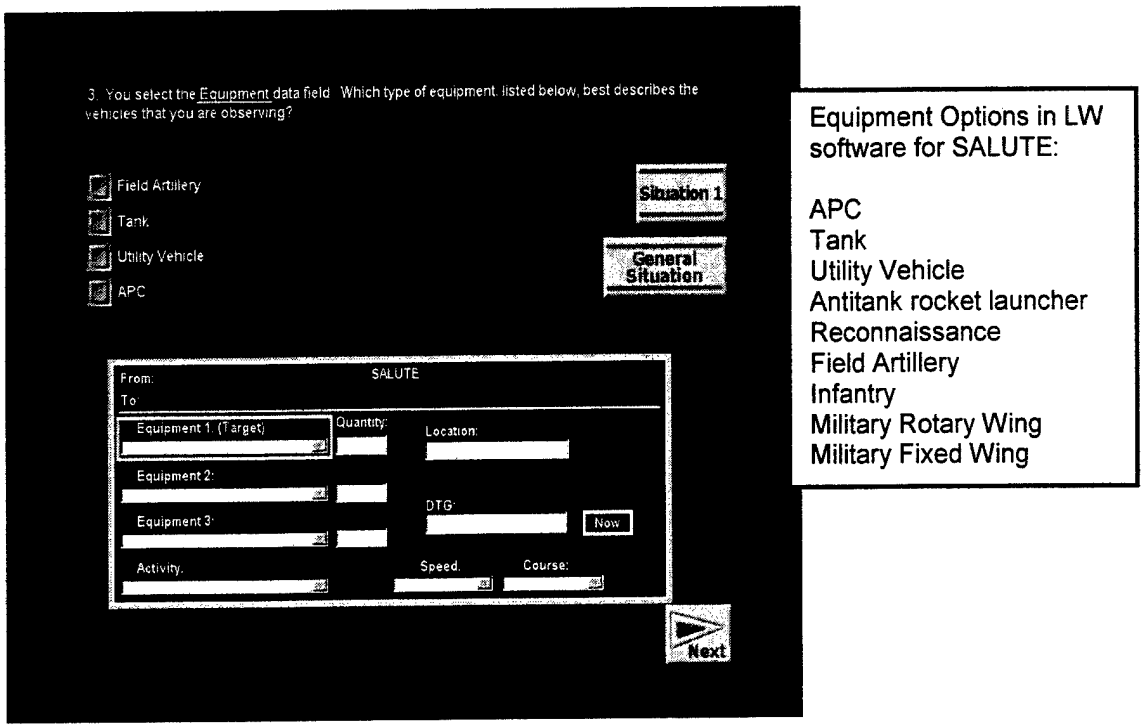


Figure 10. Example of a Spot Report question not covered in the message training that required a menu-selection response. [The question followed the hypothetical combat situation shown in Figure 7. The nine possible equipment choices as listed in LW software are shown on the right of the graphic.]

Other menu-selection questions required the Soldier to enter a number in the designated field. This is illustrated in Figure 11, where the Soldier had to determine the number of ambulatory and litter patients for the MEDEVAC request.

Before answering each question, Soldiers had the opportunity to go back to the combat situation screen for the purpose of review. However, they could not go back and review previous questions or change previous responses.

Results

Background Measures

Statistical comparisons were made between the two experimental groups on all background measures. No significant differences, at an alpha level of .05, existed on any of the measures.

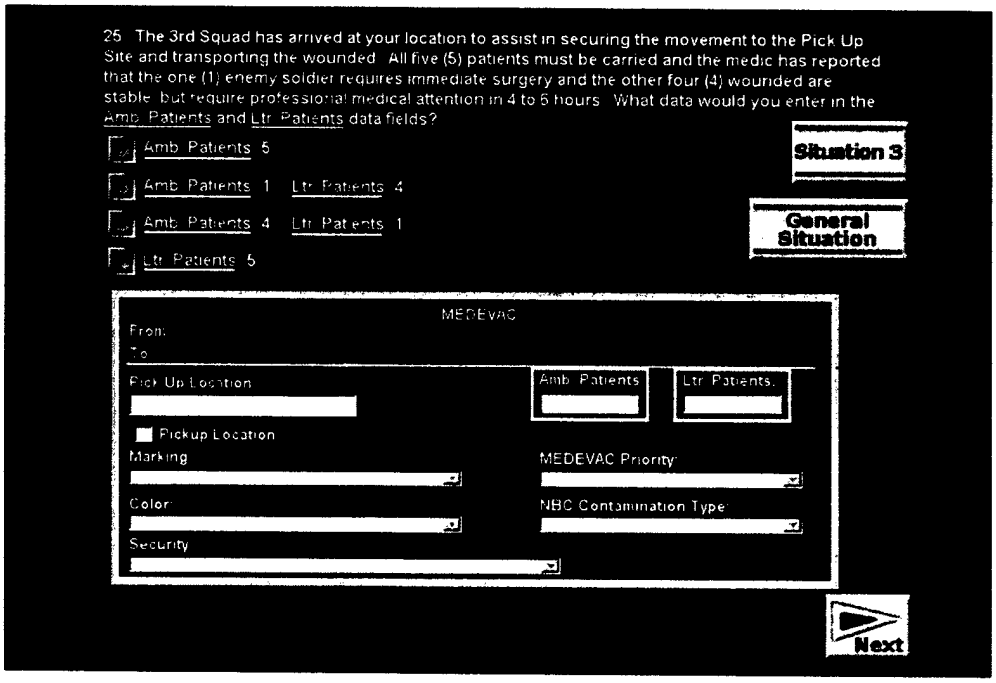


Figure 11. Example of a MEDEVAC question requiring message training plus additional cognitive skills, and a menu-selection response.

Age and education. Soldiers were questioned about their age and educational background (see Appendix A for the training survey). The mean age was 19.65 years (*SD* = 1.93) with a range of 17 to 26 years old. The mean age of the Train-ApEx group was 19.82 (*SD* = 2.41); mean age of the ApEx-Train group was 19.46 (*SD* = 1.32).

Seventy-five percent of the Soldiers reported their highest level of education was high school, and the remaining 25% reported having had less than 4 years of college. Within the Train-ApEx condition, 79% had only a high school education; within the ApEx-Train condition, 71% had only a high school education.

Prior experience with computers and messages. Seventy-one percent of the Soldiers in each condition reported owning a personal computer. Forty-two percent stated they used a computer on a daily basis prior to beginning OSUT (see Table 3). In addition, about half the Soldiers (56%) indicated that prior experience with computers helped them during the experiment.

Table 3
Computer use Prior to OSUT

Computer Use	# (%) in Train-ApEx	# (%) in ApEx-Train	# (%) of All Soldiers
Daily	9 (38%)	11 (46%)	20 (42%)
Weekly	8 (33%)	7 (29%)	15 (31%)
Monthly	2 (8%)	2 (8%)	4 (8%)
Less than Monthly	2 (8%)	4 (17%)	6 (13%)
Never	3 (13%)	0 (0%)	3 (6%)

Soldiers were also asked about their prior training in OSUT on each of the messages. These percentages are in Table 4. Most (90%) indicated they had training on Spot Report. Half indicated training on NBC-1. About 30% indicated training on CFF and MEDEVAC.

Table 4
Prior Training on Messages

Message	# (%) in Train-ApEx	# (%) in ApEx-Train	# (%) of All Soldiers
Spot Report	22 (92%)	21 (88%)	43 (90%)
NBC-1	15 (63%)	10 (44%)	25 (53%)
Call for Fire	10 (42%)	5 (22%)	15 (32%)
MEDEVAC	7 (29%)	6 (26%)	13 (28%)

Note. One non-response for CFF, NBC-1 and MEDEVAC in theApEx-Train condition. Percentages based on number of Soldiers responding.

Test Performance

One Soldier in the ApEx-Train condition did not have a pretest score because of computer malfunctions. However, the final exam and application exercise scores for this Soldier were available and included in the analyses. Occasionally a few Soldiers did not answer some questions. A Soldier could accidentally hit the "next" button, and the software would allow him to continue without a warning that he needed to answer the question. Instead of eliminating the few Soldiers who skipped some questions from all analyses, their test scores were adjusted for the number of questions they did answer. All individual question percentages were also adjusted.

The two experimental conditions were compared on the pretest, final exam, and the application exercise measures. There were no significant differences between the two conditions on any of these measures. Statistics on these measures are in Table 5. Scores show that for each group, the pretest scores were the highest (63%), and the application exercise scores were the lowest (50%).

Table 5
Scores (% correct) on Message Pretest, Final Exam, and Application Exercise

Experimental Condition	Statistic	Performance Measure		
		Pretest[a]	Final Exam[b]	Application Exercise[c]
Train-ApEx	*M*	61%	59%	46%
	SD	14%	13%	13%
	Min-Max	20-90%	17-79%	18-70%
	n	24	24	24
ApEx-Train	*M*	64%	59%	53%
	SD	13%	20%	13%
	Min-Max	35-90%	17-90%	27-73%
	n	23	24	24

[a] $F(1, 45) = 0.51$ $p = .479$.
[b] $F(1, 46) = 0.002, p = .966$.
[c] $F(1, 46) = 2.71, p = .106$.

Correlations among the three test scores were significant ($p < .001$). The correlation between the pretest and final exam was .55. It was .54 between the pretest and application exercise, and was .45 between the final exam and application exercise.

Item analyses on the pretest and final exam. The responses to each question on the pretest and final exam were examined to gain insights into Soldier performance. The mean percentage of Soldiers answering each question correctly was calculated (see Appendixes B and C).

First, the questions were examined by message type. The percentages in Table 6 indicate that the General and Spot Report questions were the easiest on the pretest (92% and 78% respectively) and the final exam (62% and 69% respectively). On the pretest, the CFF questions were the most difficult (38%). However, on the final exam, the MEDEVAC, NBC-1 and CFF questions were of similar difficulty (54% to 57%), presumably a reflection of Soldiers learning about these messages in the lessons. Because of the limited number of questions for each type of message, no inferential statistical procedures were applied to compare the message types or the experimental conditions.

Answers to Spot Report questions on the pretest were consistent with Soldiers' responses regarding OSUT training on messages. Spot Report scores were high, and 90% of the Soldiers said they had training on Spot Report. However, the pretest scores on the other messages were not necessarily consistent with Soldiers' responses to their training on these messages.

Table 6
Mean Percent Correct on Pretest and Final Exam by Message Type and Experimental Condition

Message Type (# items)	Experimental Condition		All Soldiers
	Train-ApEx	ApEx-Train	
	Pretest		
General *(4 items)*	91%	94%	92%
SPOT *(4 items)*	83%	73%	78%
MEDEVAC *(3 items)*	54%	68%	61%
NBC-1 *(4 items)*	49%	50%	50%
CFF *(5 items)*	34%	42%	38%
	Final Exam		
General *(3 items)*	65%	58%	62%
SPOT *(6 items)*	69%	70%	69%
MEDEVAC *(8 items)*	56%	57%	56%
NBC-1 *(6 items)*	56%	57%	57%
CFF *(6 items)*	53%	55%	54%

Soldiers rank ordered the ease of learning the four messages. The final exam results corresponded in part to the Soldiers' ordering. Spot Report was ranked the easiest to learn by the majority (74%) of Soldiers (Table 7). Although MEDEVAC was rated as the most difficult message to learn by a majority (61%) of the Soldiers, final exam scores on MEDEVAC questions were not the lowest.

Table 7
Ease of Learning the Messages: Ranks Assigned to Each Message

Message	Rank Order			
	1st (easiest to learn)	2nd	3rd	4th (hardest to learn)
	Number of Soldiers			
Spot Report	35	4	4	4
CFF	4	21	16	6
NBC-1	4	15	20	8
MEDEVAC	4	7	7	29

Results on the pretest and final exam questions were also compared by their degree of similarity. Table 8 presents findings by the four similarity categories and by experimental condition. These categories allowed a rough estimate of the extent of learning that occurred in the message training. As shown in Table 8, performance on the identical questions reflected a mean improvement of 24 percentage points from the pretest to the final exam (from 48% to 72% correct). The similar questions showed an increase of only 1 to 2 percentage points. The results also indicate that the unique questions on the pretest were easier than the unique questions on the

final exam (77% on pretest versus 52% on final exam). These patterns held for both experimental conditions.

Table 8
Mean Percent Correct on Pretest and Final Exam by Question Similarity

Question Similarity	Experimental Condition		All Soldiers
	Train-ApEx	ApEx-Train	
Correspondence to Final Exam	**Pretest Questions**		
Identical to Final *(3 items)*	46%	51%	48%
Highly Similar *(8 items)*	64%	63%	64%
Moderately Similar *(3 items)*	53%	63%	58%
Unique *(5 items)*	76%	78%	77%
Correspondence to Pretest	**Final Exam Questions**		
Identical to Pretest *(3 items)*	75%	68%	72%
Highly Similar *(8 items)*	66%	66%	66%
Moderately Similar *(3 items)*	58%	61%	59%
Unique *(13 items)* [a]	52%	53%	52%

[a] The last seven questions in the final exam were unique. They painted a combat scenario for the Soldier. As events occurred sequentially within the platoon scenario, he was required to identify the missing elements in the message. The Soldier was placed in the role of the platoon leader's RTO (radio telephone operator) and had to monitor the radio. The first report was a Spot Report on an enemy engagement, followed by a MEDEVAC request. Then there was a CFF suppression message, followed by a fire-for-effect CFF. This was followed by another Spot report message, then an NBC-1 report, and finally a MEDEVAC request.

The content of the questions was examined to determine factors that might have influenced Soldier responses. Easy questions on the pretest often required identifying which message to send (the general items). Hard questions were on message content. For example, on pretest question #9, Soldiers thought the CFF message should include the type of indirect fire ammunition to be used as opposed to providing a description of the target. On question #11, Soldiers thought the NBC-1 report should include the NBC agent used in the attack or the estimated casualties, as opposed to the azimuth of the reporting unit from the attack location. Both examples indicate that Soldiers initially thought these two messages should provide detail that cannot be determined at the time (e.g., type of NBC agent) or specifics that must be determined by a higher authority (e.g., type of ammunition). Soldiers thought "fire for effect" (question #15) meant that the target should be completely destroyed or that the observer is calling for fires over a large area, rather than that the observer is certain of the target location and no adjustment is required. Both incorrect responses are rationale interpretations or educated guesses of the phrase "fire for effect," given no prior knowledge of a CFF message.

On the final exam, the hardest question (#3, only 8% answered correctly) asked Soldiers to integrate information about all the messages and was unique in this respect. Seven other questions were answered correctly by less than 50% of the Soldiers. Four (#s 7, 9, 28, and 29) were "missing element" questions, meaning Soldiers had to identify what was missing from a message, if anything. None of these questions was on Spot Report, but rather on MEDEVAC,

CFF, and NBC-1. On MEDEVAC question #5, Soldiers had trouble determining what element directly indicated the seriousness of wounds; they tended to respond with factors such as litters, which only partially indicate medical status. On CFF question #13, Soldiers thought the CFF provided all the information necessarily to "destroy an enemy unit" as opposed to the information necessary to hit or adjust rounds to a target. On NBC-1 question #17, Soldiers did not understand all the factors necessary to determine the location of an NBC attack. The incorrect responses seemed to reflect a lack of understanding of certain principles of map reading (e.g., azimuth, back azimuth, and grid coordinates).

Item analysis on the application exercise. An item analysis was also conducted on the application exercise. The mean percentage of Soldiers answering each question correctly was calculated (see Appendix D). To better understand Soldier performance, the questions were examined by three categories: message type, whether the answers could be derived from the message training, and type of response required. As with the item analyses on the pretest and final exam, no inferential statistical procedures were applied to compare the experimental conditions or the different question categories.

Table 9 shows the scores by the three question classifications on the application exercise. For all Soldiers, the greatest differences were between the general questions and the questions on specific messages (90% correct versus 39% to 54% correct), and between the questions covered in the training and the questions that required additional knowledge and/or cognitive skills (79% correct versus 40% to 44% correct). The field-select items appeared to be somewhat easier than the menu-select items for both conditions (54% correct versus 44% correct).

Table 9
Mean Percent Correct on the Application Exercise by Question Category

Question Category	Experimental Condition		All Soldiers
	Train-ApEx	ApEx-Train	
	Message Type		
General *(2 items)*	98%	100%	99%
SPOT *(10 items)*	49%	58%	54%
MEDEVAC *(8 items)*	46%	46%	46%
CFF *(10 items)*	34%	45%	39%
	Relationship to Message Training		
In Training *(6 items)*	77%	81%	79%
Training Plus *(8 items)*	39%	41%	40%
Not in Training *(15 items)*	39%	49%	44%
	Type of Response Required[b]		
Field Select *(7 items)*	53%	55%	54%
Menu-Select *(21 items)*	40%	48%	44%

[a] No NBC-1 questions in the application exercise.
[b] Excludes the two general questions.

The scores for the two experimental conditions never differed by more than 11 percentage points (Table 9). In each instance, the higher scores were obtained in the ApEx-Train condition.

Soldier Reactions to the Messages and the Training

The Soldier survey had some general questions on the message training that all the Soldiers received. With regard to the amount of information presented, 75% stated it was "about right;" 18% said it was "too much." The majority of the Soldiers (88%) felt the computer-based training was an effective means of training, and they like the interactive format. In addition, almost all (96%) stated they tried to answer the "thinking-ahead" questions correctly, and would retain them in the training software.

The survey also had some specific questions about the messages. Almost all the Soldiers (96%) indicated satisfaction with the battlefield-scenario approach used in the training. In general, they thought they could remember the purpose of each message longer than they could retain the details. Fifty-six percent stated they could remember the purpose for one to three months, while 44% said they could remember message details for only one to two days. Thirty percent said they could remember the purpose and the details for only a week.

The survey included a free response section at the end, allowing Soldiers to comment on the training. Of the 48 Soldiers who filled out surveys, 17 provided written comments. Eleven (65%) of these comments were positive, with nearly an equal number coming from both the Train-ApEx group and the ApEx-Train group. Most of the positive comments mentioned the training as a positive learning tool. Five (29%) of the comments were negative, with all but one coming from the ApEx-Train group. The negative comments focused on the need to make the material less repetitive, which led to boredom, the need for hands-on training, and the difficulty of the material.

Discussion

Soldier Experience

The findings show some of the challenges in training inexperienced Soldiers on the most common military messages. The Soldiers who participated in the research had not completed their advanced training in the Army. Upon graduation from Infantry OSUT, they would be assigned to their first unit. Therefore, they had very limited Army experience.

It was important to know whether Soldiers with more military experience would perform better on the message pretest and final exam than the OSUT Soldiers. To examine this issue, the prerequisite message lessons and tests were given to five instructors in the Infantry Basic Noncommissioned Officer Course (BNCOC). These instructors were Staff Sergeants and Sergeants First Class. Their average score was 87% correct on the pretest. In contrast, the OSUT sample in the experiment averaged 67% on the pretest. Without taking the message training, the BNCOC instructors scored 20 percentage points higher than the OSUT Soldiers, reflecting more military knowledge and experience. The BNCOC instructors averaged a score of

80% on the final exam, as compared to 59% for the OSUT sample in the experiment. In fact, within the OSUT sample only 10% of the Soldiers scored 80% correct or higher on the final exam. The BNCOC instructor final exam scores showed that the information on messages could be learned, but would require more study by the typical inexperienced Soldier to achieve "mastery." The OSUT Soldiers in the experiment went through the lessons only once, which apparently was not adequate.

Based on the limited number of identical questions on the pretest and final exam, the message training had a positive effect. However, a greater difference was expected on the highly similar items as well. Perhaps there simply was too much new information presented in too short a period of time for inexperienced Soldiers to acquire all the desired skills. Perhaps the exercises that simply required the Soldiers to think about the appropriate message should have been replaced by exercises that required them to make a response. More practice exercises within each message lesson may be needed for this population of Soldiers as well.

Sending Messages in Tactical Situations

No significant differences were found between the experimental conditions on the total scores for the application exercise. The item analysis provided insights into and explanations for this finding. The similarity in performance between the experimental conditions on the questions that were based totally on the message training was unexpected. However, the results showed that these questions were relatively easy as they were answered correctly by 79% of the Soldiers. Prior knowledge and common military knowledge may have contributed to the relatively high performance of all Soldiers on the questions in this category, as opposed to the prerequisite training program per se. The category included all the general questions plus questions on Spot Report. Almost all the Soldiers in each condition (88% and 92%) indicated prior training on Spot Report.

On the other hand, all the other application exercise questions were relatively difficult (answered correctly by 40% and 44% of the Soldiers in the two conditions). These questions either required the doctrinal information in the training plus additional knowledge and cognitive skills, or were not covered by the training. Consequently, being trained on the doctrinal requirements of messages only did not guarantee the correct or best choice. The item analysis indicated that relatively high-level cognitive skills and additional military knowledge were often essential in order to answer the questions correctly.

The item analysis revealed interesting confusions and lack of understanding of military messages by the Soldiers. In general, these problems did not reflect inadequacies in the training, but rather the complexities that underlie military messages in general, digital message formats in particular, and the choices and decisions required to navigate a menu-selection process. Some illustrations of these complexities and requirements are cited in the next paragraph.

In all the menu-selection items, the response options were taken directly from version 1.0 LW software. They were options the Soldier would actually see when using the tactical system. For example, Question #3 (30% correct) required that Soldiers identify the vehicle in the picture. Most thought it was a tank when it really was an armored personnel carrier. Question #7 (25%

correct) also required that Soldiers understand what is meant by a Command Center and relate that to the situation's description. To answer Question #19 (44% correct), Soldiers had to infer that although the vehicles were destroyed, enemy could still be in the area. Question #9 (38% correct) was a field-selection item. The correct answer was not in the message training. However, a Soldier could have arrived at the correct answer by a process of elimination, as the other options clearly contained data relevant to a different situation.

The Measurement Process

It is difficult to know what cognitive process(es) is(are) measured by a particular test or test item based purely on the structure and semantic content of the test (Nuthall & Alton-Lee, 1995; Kreitzer & Madaus, 1994). To make such assessments, it is also important to know what was taught originally (Bloom et al., 1956). Yet Nuthall and Alton-Lee (1995) found that over time, students tend to rely less on simple recall and more on deduction. They concluded, "Those who write test items need to understand that the content of an item does not define what a student needs to know so much as the domain of knowledge and problem structure within which a student will exercise problem solving skills consisting of knowledge retrieval, deduction, and construction processes" (p. 220).

These prior findings by Nuthall and Alton-Lee (1995) may explain, in part, the lack of differences between the Train-ApEx and ApEx-Train groups on the application exercise. Even though some items were covered by the lessons, that did not guarantee the use of "recall" to answer these items. Nor did the fact that the material was presented in the lesson ensure that Soldiers had mastered the information, and then used recall as the primary means of determining an answer. In fact, the similarity in the percentage of correct responses for the two groups on the application items that were covered by the training would indicate that these items did not require recall of the message instruction.

For the questions in the application exam that were assumed to require recall as well as higher-level cognitive skills (the "training plus" items), both groups had similar and low scores. It was assumed that recall was a necessary, but not sufficient condition for a correct answer, but this may have been an erroneous assumption. However, if Soldiers in the Train-ApEx condition had had the opportunity to study the lesson material at greater length, the results may have changed. Nonetheless, it appears that higher-level cognitive skills were required on these questions, given the relatively low scores.

Training and Experience Implications

It is important to reinforce the fact that the prerequisite message training, as with the other prerequisite lessons on orders, map reading and graphic control symbols, was developed to address a critical Soldier need. That requirement was to provide needed training and information to Soldiers who will receive the Land Warrior system. Within that training package, standards were established for the pretest and the final exam. If Soldiers scored below a specified criterion on the pretest, then it was recommended they take the lessons. A passing score was also established for the final exam. Results from the BNCOC instructors supported the two criteria established for messages. If Soldiers did not achieve 90% on the pretest, it was recommended

they take the message lessons. A standard for 80% was set on the final exam. Three of the five BNCOC instructors achieved at least 90% on the pretest, and each scored 80% or higher on the final exam. The other two instructors scored below 90% on the pretest, and scored below 80% on the final exam. These findings support the criteria established for the message pretest and final exam.

The similarity in scores between the two groups on the application exercise questions that were not reflected in the training was consistent with expectations. The relatively low scores on these questions indicate that there are challenges in training inexperienced soldiers on appropriate message content for use in in a tactical battlefield environment. The road to expertise is not entirely clear. Additional training via traditional forms of instruction (classroom, multi-media) on hypothetical combat situations could be provided. But the desired expertise, similar to that characteristic of the more senior noncommissioned officer population, may require more extensive unit experience in the field against a well-trained opposing force, where Soldiers serve in critical communication roles.

Conclusions

A primary lesson learned from this research is that it is easy to make erroneous assumptions regarding the skills, knowledge and experience required to employ digital systems for some Soldier populations. Often message training on "digital systems" means training on the mechanical use of software interfaces, "learning the switches" so to speak. The findings show that other skills and knowledge are critical on the battlefield. Doctrinal knowledge is required. The terms used in digital message formats must be understood and their scope of application known. Yet doctrinal knowledge plus expertise in using a software interface are not sufficient conditions. Also essential are military knowledge and experience, and the ability to understand the battlefield situation and integrate critical elements of information. Additional research is needed on the types and length of training needed to prepare Soldiers to generate appropriate military messages.

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Appendix A
Training Survey

Training Survey ID #_____

We thank you for providing information on this computer-based training.
We appreciate your cooperation and time devoted to this survey.

Full confidentiality will be maintained in the processing of all data.

US Army Research Institute for the Behavioral and Social Sciences, Ft. Benning, GA.

1. Age: _____

2. What is your highest level of education? (check one)
   - _____ a. High School
   - _____ b. Technical School
   - _____ c. Less than 4 years of college
   - _____ d. Completed 4 years of college
   - _____ e. Other (describe) _____

3. Do you own a personal computer? Yes No

4. **Before** coming to OSUT, how often did you use a computer? (circle one)

Daily	Weekly	Monthly	Less Than Monthly	Never

5. Did your previous experience with computers help during this training?
   - _____ a. Yes
   - _____ b. No
   - _____ c. No prior experience

6. Have you had any prior training in OSUT on the 4 messages presented today?

Yes	No	a. SPOT Report (SALUTE)
Yes	No	b. Call For Fire
Yes	No	c. NBC-1
Yes	No	d. MEDEVAC

Think Ahead Questions

7. When you encountered a think ahead question in the digital messages training, did you try to answer it correctly?
   - _____ a. Yes
   - _____ b. No

8. If you were in charge of revising the digital messages training, would you retain or eliminate the think ahead questions?

_____ a. Retain
_____ b. Eliminate

9. Place the Digital Messages below in order from "easiest to learn" to "hardest to learn" by placing a "1" by the easiest message to learn, a "4" by the hardest message to learn, and "2" and "3" in between.

_____ SPOT Report (SALUTE)
_____ Call For Fire
_____ NBC-1
_____ MEDEVAC

10. Did you like answering questions that were based on different battle scenarios?

_____ a. Yes
_____ b. No

11. How long do you think you can remember the PURPOSE of each message and their major differences?

____ a. 1 day
____ b. 2 days.
____ c. 1 week
____ d. 1 month
____ e. 3 months.

12. How long do you think you can remember the DETAILS of each message?

____ a. 1 day
____ b. 2 days.
____ c. 1 week
____ d. 1 month
____ e. 3 months.

13. Was the amount of information that you had to learn on Digital Messaging...

____ a. ...too little.
____ b. ...too much.
____ c. ...about right.

14. Did you like working with this interactive computer-based training?

_____ a. Yes
_____ b. No

15. Was computer-based training an effective way for you to learn about digital messages?

_____ a. Yes
_____ b. No

16. Please add any comments you have about the training you just received.

Appendix B
Item Analyses for Pretest

Table B-1
Mean Percent Correct on Each Pretest Question

Item #	Message Type	Similarity to Final Exam	Experimental Condition		All Soldiers
			Train-ApEx	ApEx-Train	
1	General	Moderate (#16)	88%	87%	87%
2	General	Unique	92%	96%	94%
3	General	Unique	92%	96%	94%
4	General	High (#1)	92%	96%	94%
5	SPOT	Identical (#6)	71%	82%	76%
6	MEDEVAC	Moderate (#7)	21%	52%	36%
7	NBC-1	Moderate (#14))	50%	83%	66%
8	SPOT	High (#8)	92%	70%	81%
9	CFF	High (#9)	25%	35%	30%
10	CFF	Unique	38%	52%	45%
11	NBC-1	Moderate (#10)	21%	17%	19%
12	MEDEVAC	High (#11)	58%	83%	70%
13	SPOT	Moderate (#20)	87%	74%	80%
14	CFF	High (#12)	50%	44%	47%
15	CFF	Identical (#13)	21%	35%	28%
16	MEDEVAC	Unique	83%	70%	77%
17	NBC-1	Identical (#2)	46%	36%	41%
18	CFF	High (#17)	38%	46%	41%
19	NBC-1	High (#18)	78%	65%	72%
20	SPOT	High (#19)	83%	65%	74%

Note. Item numbers in similarity column refer to final exam item numbers. There was no pretest available for one soldier in ApEx-Train. Percentages are based on the number of soldiers who answered each question.

1. You and your buddy are manning a platoon observation post. You observe the approach of a HIP helicopter and see 12 to 14 enemy soldiers dismount and move into a tree line about 2000 meters from your position. What type of message should you send to the platoon leader?	# Responses	
	Train-ApEx	ApEx-Train
MEDEVAC Request	0	0
SITREP	1	2
NBC-1 Report	2	1
* **SPOT Report**	**21**	**20**
• *Moderate Similarity to Final # 16*		

2. Your squad is occupying defensive positions on a ridge and comes under a mortar attack. The rounds release a vapor. You hear a chemical agent alarm and see the detection tape on your chemical protective suit change color. As you mask and sound the alarm, what message would be used to relay the details of the chemical attack warning to others?	# Responses	
	Train-ApEx	ApEx-Train
MEDEVAC Request	1	0
Call for Fire	1	1
* **NBC-1 Report**	**22**	**22**
SPOT Report	0	0
• *Unique*		

3. As your squad moves out on a recon patrol, it comes under mortar fire. Four (4) members of your squad are wounded. Wounded include the Squad Leader and both Team Leaders. What type of message would you use to help your buddies receive prompt medical attention?	# Responses	
	Train-ApEx	ApEx-Train
* **MEDEVAC Request**	**22**	**22**
Call for Fire	1	0
NBC-1 Report	1	1
SPOT Report	0	0
• *Unique*		

4. Your squad is conducting a security patrol along the river, south of the village that your company is defending. Heavy rains for the past three (3) days have saturated the ground and the river has flooded some of the low fields in the area. As your squad moves through the woods, you observe that a bridge used by farmers to move goods and equipment has been washed away. What type of message would be used to inform the platoon leader that the bridge is out?	# Responses	
	Train-ApEx	ApEx-Train
MEDEVAC Request	1	0
Call for Fire	1	1
NBC-1 Report	0	0
* **SPOT Report**	**22**	**22**
• *High Similarity to Final # 1*		

5. Your leaders and the intelligence system need timely, complete and accurate reporting on enemy forces and changed in the terrain and weather that impact on the mission. What key work or phrase can be used to aid you submitting a complete and accurate SPOT Report?	# Responses	
	Train-ApEx	ApEx-Train
Fire Mission	2	0
SITREP	3	4
INTSUM	2	0
* **SALUTE**	**17**	**18**
• *One non-response in ApEx-Train.*		
• *Identical to Final # 6*		

6. While assisting in the platoon command post, you receive the following MEDEVAC Request, "Echo 94 this is Papa 63. Pickup at grid PK934628, contact Papa 63 on 35.65. No enemy contact. Nine (9) casualties, all US soldiers. Over." What essential element is missing to complete and forward this request?	# Responses	
	Train-ApEx	ApEx-Train
Date and time of the incident or timeframe in which the injuries occurred.	17	8
Details of the incident that caused the wounds.	2	2
* **Medical precedence of the seriousness of the casualties.**	**5**	**12**
Blood types of the wounded soldiers.	0	1
• *Moderate Similarity to Final # 7*		

7. You are detailed to help the platoon sergeant break down the ammo resupply. The 2nd squad, call sign Delta 87, is conducting a recon patrol South of the platoon position. While monitoring the platoon net you hear the following message, "Echo 63 this is Delta 87. NBC-1 Report. From my location at 235 degrees, probable chemical agent attack on a US tank company. Agent delivered by artillery. Time now. Unit has masked, going to MOPP 4 now. Over." What essential element is missing to complete and forward this repot?	# Responses	
	Train-ApEx	ApEx-Train
Duration of the attack and the number of chemical shells delivered.	6	1
Full identification of the US element attacked.	3	3
* **Location of the attack by grid or the 2nd Squad's location.**	**12**	**19**
Estimated number of casualties sustained by the tank company.	3	0
• *Moderate similarity to Final # 14*		

8. You were selected to relieve the platoon leader's RTO for two (2) hours. While monitoring the platoon and company nets you receive the following message, "Echo 94 this is Papa 72. SPOT Report. Insertion of enemy forces at grid PM695745 occurring now by HIND helicopters, gray uniforms with black berets and small arms observed. Over." What essential element is missing to complete and forward this report?	# Responses	
	Train-ApEx	ApEx-Train
Date and time of incident and/or duration of the activity.	1	0
The identification of the enemy units or forces involved on the ground and in the air.	0	2
Actions being taken by the unit observing the insertion and casualties.	1	5
* **Size of the force inserted, number of troops and number of helicopters involved.**	**22**	**16**
• *High Similarity to Final # 8*		

9. You were selected to relieve the platoon leader's RTO while he is at chow. While monitoring the platoon and company nets you receive the following message, "Echo 24 this is Zulu 56. Fire-for-Effect. Grid PN466697. Tanks, over." What essential element is missing to complete the message as a CALL FOR FIRE?	# Responses	
	Train-ApEx	ApEx-Train
* **The number of tanks and what the tanks are doing.**	**6**	**8**
The identification of the enemy units or forces in the target area.	6	4
Actions being taken by the unit observing the target.	2	5
Type of ammunition to be used in the engagement of the enemy target.	10	6
• *High Similarity to Final # 9*		

10. What essential element of the CALL FOR FIRE is missing from the following list? • The observer's identification • Warning order • Target location	# Responses	
	Train-ApEx	ApEx-Train
Estimated rounds required for adjustment.	5	4
* **Description of the target.**	**9**	**12**
Type of rounds requested.	8	4
Frequency of the requesting unit.	2	3
• *Unique*		

11. What essential element of the NBC-1 Report is missing from the following list? - Location of the reporting element - Date and time the attack started - Type of attack	# Responses	
	Train-ApEx	ApEx-Train
Agent used in the attack.	9	11
* **Azimuth to the attack location.**	**5**	**4**
Local wind direction and speed.	2	3
Estimated casualties.	8	5
• *Moderate Similarity to Final # 10*		

12. What essential element of the MEDEVAC Request is missing from the following list? - Location of the pickup site - Radio frequency and call sign at the pickup site - Number of patients by precedence - Special equipment required - Number of patients requiring litters - Security situation at the pickup site - Patient nationality and status - NBC contamination	# Responses	
	Train-ApEx	ApEx-Train
Blood type of all wounded.	4	3
Supporting medical hospital for the unit.	3	0
Rank or grade of the senior wounded official.	3	1
* **Method of marking the pickup site.**	**14**	**19**
• *High Similarity to Final # 11*		

13. What essential element of the SPOT Report is missing from the following list? - Location of the activity - Enemy unit or special markings - Date and time of the observed activity - Types of enemy equipment observed - Activity of the enemy force	# Responses	
	Train-ApEx	ApEx-Train
Type of enemy force.	1	0
* **Size of the enemy force.**	**20**	**17**
Frequency and call sign of the unit reporting.	1	3
Strength of the enemy force.	1	3
• *Moderate Similarity to Final # 20* • *One non-response in Train-ApEx.*		

14. The CALL FOR FIRE provides all information required to _____.	# Responses	
	Train-ApEx	ApEx-Train
* **hit, adjust to, or find a target and produce the desired results.**	**12**	**10**
aim the guns and select the number and type of rounds to fire.	6	2
guide close air support to a precise release point for bombing a target.	3	0
destroy an enemy unit with artillery or close air support.	3	11
• *High Similarity to Final # 12*		

15. Artillery units are prepared to receive calls for fire from any soldier on the battlefield. Certain terms, however, are used to let the fire support unit know the type of fires required. The term 'SUPPRESSION', for example, is used to bring quick fires on or near a target to disrupt it, cause it to take cover, or move. The term 'FIRE-FOR-EFFECT' tells the fire support unit that _____.	# Responses	
	Train-ApEx	ApEx-Train
the observer wants the target completely destroyed.	8	9
the observer wants all rounds to be fired at once.	1	0
* **the observer is certain of the location of the target and that not adjustment is required.**	**5**	**8**
the observer is uncertain of the target location and wants fires over a wide area.	10	6
• *Identical to Final # 13*		

16. The MEDEVAC Request includes detailed information on the casualty pickup site. The request should include the grid location of the site, the radio frequency and call sign at the site, how the pickup site will be marked, and hazards in the area. What essential hazard information should be provided?	# Responses	
	Train-ApEx	ApEx-Train
The presence of telephone or electrical lines within two miles of the pickup site.	2	2
The assurance that all air defense weapons in the area are in a "WEAPONS HOLD" status.	2	4
* **The absence or presence of hostile forces in the area.**	**20**	**16**
The absence or presence of foreign national in the area.	0	1
• *Unique*		

17. The exact location of an NBC attack is an essential element in evaluating the damages and casualties, as well as warning and protecting other forces. An NBC-1 Report should include the grid location of the attack and/or _____.	# Responses	
	Train-ApEx	ApEx-Train
the back azimuth from the attack location to the observer.	3	0
* **the grid location of the observer and the azimuth or direction to the attack location.**	**11**	**8**
the estimated distance from the observer to the attack location.	3	4
the estimated distance from the attack site to the nearest friendly unit.	7	10
• *Identical to Final # 2*		
One non-response in ApEx-Train.		

18. The exact location and description of the enemy force or target is an essential element in a CALL FOR FIRE message. It may be possible to SUPPRESS an enemy force without hitting it directly, but to damage equipment or produce casualties a precise location is required. What means is normally used to bring the rounds on to the target?	# Responses	
	Train-ApEx	ApEx-Train
A close air support mission is diverted to find and attack the target.	4	5
A trained forward observer, aerial observer, or FIST is moved to locate the target.	8	2
* **The fires are adjusted by the individual or unit making the CALL FOR FIRE.**	**9**	**10**
Rounds are fired in varied and dispersed patterns to engage the target.	3	5
• *High Similarity to Final # 17*		
• *One non-response in ApEx-Train.*		

19. Reporting the time and location of the attack is critical to assisting commanders in their evaluation of damages and casualties, as well as warning and protecting other forces. An NBC-1 Report must also include _____.	# Responses	
	Train-ApEx	ApEx-Train
* **the type of attack, nuclear, chemical, or biological, and details about the delivery.**	**18**	**15**
an estimate of casualties.	1	1
the type of weapons used to make the attack.	3	4
the results of testing local samples. The report may be delayed for these details.	1	3
• *High Similarity to Final # 18*		
• *One non-response in Train-ApEx.*		

20. The SPOT Report should provide information on the enemy unit being observed. What details that you could observe from a distance may provide your higher headquarters information on the enemy unit involved?	# Responses	
	Train-ApEx	ApEx-Train
* **Patches and symbols on uniforms and equipment.**	**20**	**15**
Documents carried by enemy commanders.	0	0
Battle flags and guidons carried by enemy troops.	3	6
Unless confirmed, NEVER provide details on the enemy unit.	1	2
• *High Similarity to Final # 19*		

Appendix C
Item Analyses for Final Exam

Table C-1
Mean Percent Correct on Each Final Exam Question

Item #	Message Type	Similarity to Pretest	Experimental Condition		All Soldiers
			Train-ApEx	ApEx-Train	
1	General	High (#4)	100%	92%	96%
2	MEDEVAC	Identical (#16)	92%	83%	88%
3	General	Unique	13%	4%	8%
4	SPOT	Unique	79%	63%	71%
5	MEDEVAC	Unique	21%	29%	25%
6	SPOT	Identical (#5)	96%	83%	90%
7	MEDEVAC	Moderate (#6)	38%	42%	40%
8	SPOT	High (#8)	67%	68%	67%
9	CFF	High (#9)	29%	33%	31%
10	NBC-1	Moderate (#11)	71%	63%	67%
11	MEDEVAC	High (#12)	88%	78%	83%
12	SPOT	High (#13)	67%	79%	73%
13	CFF	Identical (#14)	38%	38%	38%
14	NBC-1	Moderate (#7)	42%	58%	50%
15	CFF	Unique	83%	63%	73%
16	General	Moderate (#1)	83%	79%	81%
17	NBC-1	High (#17)	46%	42%	44%
18	CFF	High (#18)	63%	63%	63%
19	NBC-1	High (#19)	71%	71%	71%
20	MEDEVAC	Moderate (#12)	57%	63%	60%
21	NBC-1	Unique	79%	79%	79%
22	MEDEVAC	Unique	54%	46%	50%
23	SPOT	Unique	63%	50%	56%
24	MEDEVAC	Unique	71%	75%	73%
25	CFF	Unique	54%	75%	65%
26	CFF	Unique	54%	58%	56%
27	SPOT	Unique	42%	75%	58%
28	NBC-1	Unique	29%	29%	29%
29	MEDEVAC	Unique	29%	38%	33%

Note. Numbers in parentheses in similarity column refer to pretest item numbers

1. Your squad is conducting a security patrol in the forest to the North of the village defended by your company. Heavy rains for the past three (3) days have saturated the ground and winds have been high with strong gusts. As your squad moves through the woods, you observe that the road to the South is blocked by several large trees that have fallen over in the storms. What types of message would be used to inform the platoon leader that the road is blocked?	# Responses	
	Train-ApEx	ApEx-Train
MEDEVAC Request	0	0
* **SPOT Report**	**24**	**22**
NBC-1 Report	0	1
CALL FOR FIRE	0	1
• *High similarity to Pretest # 4*		

2. The MEDEVAC Request includes detailed information on the casualty pickup site. The Request should include the grid location of the site, the radio frequency and call sign at the site, how the pickup site will be marked, and hazards in the area. What essential hazard information should be provided?	# Responses	
	Train-ApEx	ApEx-Train
the assurance that all air defense weapons in the area are in a "WEAPONS TIGHT" status	1	3
the presence of telephone or electrical lines within 2 kilometers of the pickup site	1	0
* **the absence or presence of hostile forces or activities in the area**	**22**	**20**
the absence or presence of foreign nationals in the area	0	1
• *Identical to Pretest # 16*		

3. Your location or the location of your unit may be included in messages as a reference to locate enemy forces or other activities and units. In which message or messages listed below, is the reporting location a required element?	# Responses	
	Train-ApEx	ApEx-Train
SPOT Report	11	6
CALL FOR FIRE and MEDEVAC Requests	4	11
* **NBC-1 Report**	**3**	**1**
NBC-1 Report and MEDEVAC Requests	6	6
• *Unique*		
• *Requires ability to compare requirements of all messages*		

4. A complete SPOT Report furnishes several essential elements of information on the enemy unit being observed. Which essential element of information do you provide by reporting distinctive uniforms, patches, and vehicle markings?	# Responses	
	Train-ApEx	ApEx-Train
These details will assist in determining the size of the force observed.	1	0
* **These details will assist in determining the enemy unit observed.**	**19**	**15**
These details will assist in determining the equipment the enemy force may employ.	1	6
These details will assist in determining the training and readiness of the enemy forces.	3	3
• *Unique*		

5. What essential element of information in the MEDEVAC Request assists the medical units in determining the seriousness of the patients wounds?	# Responses	
	Train-ApEx	ApEx-Train
* **Number of patients by medical precedence (Line 3)**	**5**	**7**
Special equipment required to extract or move the patient (Line 4)	9	6
Number of patients by type, litter and ambulatory (Line 5)	6	10
Type of NBC contamination present (Line 9)	4	1
• *Unique*		

6. Your leaders and the intelligence system need timely, complete and accurate reporting on enemy forces and changed in terrain and weather that impact on the mission. What key word or phrase can be used to aide you submitting a complete and accurate SPOT Report?	# Responses	
	Train-ApEx	ApEx-Train
* **SALUTE**	**23**	**20**
FIRE MISSION	0	1
INTSUM	0	2
SITREP	1	1
• *Identical to Pretest # 5*		

7. While assisting in the platoon command post, you receive the following MEDEVAC Request: "*Foxtrot 77 this is Romeo 42. MEDEVAC Request! Pickup at grid 11S PK934628, contact Papa 63 on 37.45. Nine (9) casualties, all litter patients. Enemy infantry platoon broke contact to the North 20 minutes ago; approach with caution. Green smoke available to mark pickup site. Five (5) EPWs, two (2) US soldiers, two (2) local civilians. Over.*" What essential element is missing to complete and forward the request?	# Responses	
	Train-ApEx	ApEx-Train
Date and time of the incident or time frame in which the injuries occurred.	13	11
Blood types of the wounded US soldiers.	1	0
Surgical procedures required to treat the wounded.	1	3

* **Medical precedence or the seriousness of the casualties.**	**9**	**10**
• *Moderate similarity to Pretest # 6*		

8. You were selected to relieve the platoon leader's RTO for two (2) hours. While monitoring the platoon and company nets you receive the following message: "*Mike 82 this is Papa 43. SPOT Report. Enemy tanks in the wood line at grid PM773969 at 11:27 hours local. Red dagger symbol on vehicles and uniform patches. T-72 tanks, wheeled infantry fighting vehicles, and wheeled recon vehicles observed. Over.*" What essential elements are missing or incomplete to make this an accurate SPOT Report?	# Responses	
	Train-ApEx	ApEx-Train
Date and time of incident and/or the duration of the activity.	1	0
The identification of the enemy units or forces.	1	0
Actions being taken by the unit making the report.	6	7
* **Size of the force inserted and count of equipment observed.**	**16**	**15**
• *High Similarity to Pretest # 8*		

9. You were selected to relieve the platoon leader's RTO while he is at chow. While monitoring the platoon and company nets you receive the following message: "*Kilo 29 this is X-ray 67. Suppression! Grid GP 465695. Air defense missile launchers. Over.*" What essential element is missing to complete the message as a CALL FOR FIRE?	# Responses	
	Train-ApEx	ApEx-Train
* **The number of missile launchers and what the air defense units are doing.**	**7**	**8**
The identification of the enemy units or forces in the target area.	11	10
Actions being taken by the unit observing the target.	4	1
Type of ammunition and/or fires required to suppress the enemy target.	2	5
• *High Similarity to Pretest # 9*		

10. What essential element of the NBC-1 Report is missing from the following list? - Location of the reporting element - Azimuth of the attack location - Date and time the attack started	# Responses	
	Train-ApEx	ApEx-Train
No essential element is missing from the list.	4	4
* **Type of attack.**	**17**	**15**
Local wind direction and speed.	2	1
Specific agent used in the attack.	1	4
• *Moderate Similarity to Pretest # 11*		

11. What essential element of the MEDEVAC Request is missing from the following list? - Location of the pickup site - Method of marking the pickup site - Number of patients by precedence - Special equipment required - Number of patients requiring litters - Security situation at the pickup site - Patient nationality and status - NBC contamination	# Responses	
	Train-ApEx	ApEx-Train
Blood type of all wounded.	0	0
Supporting medical hospital for the unit.	2	4
Rank or grade of the senior wounded individual.	1	1
Radio call sign and frequency at the pickup site.	**21**	**18**
• *High Similarity to Pretest # 12*		

12. What essential element of the SPOT Report is missing from the following list? - Location of the activity - Enemy unit or special markings - Date and time of the observed activity - Types of enemy equipment observed - Activity of the enemy force	# Responses	
	Train-ApEx	ApEx-Train
Type of enemy force	0	1
Size of the enemy force	**16**	**19**
Frequency and call sign of the unit reporting	1	1
Location of the unit reporting	7	3
• *High Similarity to Pretest # 13*		

13. The CALL FOR FIRE provides all information required to _____.	# Responses	
	Train-ApEx	ApEx-Train
destroy an enemy unit with artillery or close air support.	12	14
aim the guns and select the number and type of rounds to fire.	1	0
guide close air support to a precise release point for bombing a target.	2	1
* **hit or adjust to a target and produce the desired results.**	**9**	**9**
• *Identical to Pretest # 14.*		

14. Your are detailed to help the platoon sergeant break down Class 5 resupply. The 3rd Squad, call sign Kilo 28, is conducting a recon patrol North of the company position. While monitoring the platoon net you hear the following message. *"Echo 69 this is Kilo 28. NBC-1 Report. From my location at 315 degrees, probable chemical agent attack on refugees traveling on road. Possible blister agent delivered by mortars. Estimate 20 rounds; surface burst. Time now. Unit has masked, going to MOPP 4, and moving upwind. Over."* What essential element, if any, is missing to complete and forward this NBC-1 Report?	# Responses	
	Train-ApEx	ApEx-Train
No essential element is missing from this NBC-1 Report.	7	7
Duration of the attack.	3	1
Estimated number and medical precedence of refugee casualties.	4	2
* **Location of the attack by grid or the 3rd Squad's location.**	**10**	**14**
• *Moderate Similarity to Pretest # 7*		

15. Artillery units are prepared to receive calls for fire from any soldier on the battlefield. Certain terms, however, are used as a WARNING ORDER to let the fire support unit know the type of fires required. The term "SUPPRESSION" tells the fire support unit that _____.	# Responses	
	Train-ApEx	ApEx-Train
* **the observer wants quick fires on or near the target to disrupt it.**	**20**	**15**
the observer wants all rounds to be fired at once.	0	3
the observer is certain of the location of the target and no adjustment is required.	1	4
the observer wants all available fires over a wide area.	3	2
• *Unique*		

16. You and your buddy are manning a platoon observation and listening post. You observe the low approach of a gray HIND helicopter. It lands near a stream bed long enough to permit 5 to 7 men to board, and the helicopter departs to the North. What type of message should you send to the platoon leader?	# Responses	
	Train-ApEx	ApEx-Train
* **SPOT REPORT**	**19**	**19**
SITREP	0	4
NBC-1 Report	1	0
No report is required since the enemy has departed the area.	3	1
• *Moderate Similarity to Pretest # 1*		

17. The exact location of an NBC attack is an essential element in evaluating the damages and casualties, as well as warning and protecting other forces. An NBC-1 Report should include the grid location of the attack and/or _____.	# Responses	
	Train-ApEx	ApEx-Train
the back azimuth from the attack location to the observer.	7	5
* **the grid location of the observer and the azimuth or direction to the attack location.**	**11**	**10**
the estimated distance from the observer to the attack location.	4	4
the wind direction and speed at the observer's location.	2	5
• *High Similarity to Pretest # 17*		

18. The exact location and description of the enemy force or facility being targeted is an essential element in a CALL FOR FIRE message. It may be possible to SUPPRESS an enemy force without hitting it directly, but to damage equipment or produce casualties a precise location is required. What method is normally used to bring the rounds on or near the target?	# Responses	
	Train-ApEx	ApEx-Train
Close air support or attack helicopters are diverted to find and attack the target.	6	2
A round is fired into the center of each artillery unit's primary sector of fire.	0	3
* **The fires are adjusted by the individual or unit making the CALL FOR FIRE.**	**15**	**15**
Rounds are fired in varied and dispersed patterns to engage the target.	3	4
• *High Similarity to Pretest # 18*		

19. Reporting the time and location of the NBC attack is critical to assisting commanders in their evaluation of damages and casualties, as well as warning and protecting other forces. An NBC-1 Report must also include _____.	# Responses	
	Train-ApEx	ApEx-Train
the results of testing local samples. The report may be delayed for these details.	1	2
an estimate of casualties or damages.	3	3
the type and caliber of artillery, missile, or aircraft used to make the attack.	3	2
the type of attack, nuclear, chemical, or biological, and details about delivery.	**17**	**17**
• *High Similarity to Pretest # 19*		

20. What essential element of the MEDEVAC Request, if any, is missing from the following list? - Location of the pickup site - Radio call sign and frequency at the pickup site - Number of patients by precedence - Special equipment required - Number of patients requiring litters - Security situation at the pickup site - Method of marking the pickup site - Patient nationality and status - NBC contamination	# Responses	
	Train-ApEx	ApEx-Train
Date and time of the incident causing the most serious wounds.	8	5
Supporting medical hospital for the unit.	2	4
Rank or grade of the senior wounded individual.	0	0
* **No essential items are missing from the list.**	**13**	**15**
• *Moderate Similarity to Pretest # 12*		

21. The NBC-1 Report provides information to help evaluate the initial and future damage and contaminated areas from an NBC attack. A complete NBC-1 Report provides information on the location of the attack. What additional element or elements of the NBC-1 Report must be provided to determine the potential spread of contamination to other units or areas?	# Responses	
	Train-ApEx	ApEx-Train
Only Line D: DATE and TIME OF ATTACK must be provided.	1	1
Only Line H: TYPE OF ATTACK must be provided.	0	4
* **Both Line D: DATE AND TIME OF ATTACK and Line H: TYPE OF ATTACK must be provided.**	**19**	**19**
Either line D: DATE AND TIME OF ATTACK, or Line H: TYPE OF ATTACK must be provided.	4	0
• *Unique*		

22. Both ground and air medical evacuation units are equipped with a variety of specialized equipment to assist in the safe treatment, extraction, and movement of injured soldiers. Not all ground or air ambulances are equipped with every device or capability. The requesting unit must inform the MEDEVAC unit when these special requirements exist. What essential elements of the MEDEVAC Request are used to alert the MEDEVAC units to those special requirements?	# Responses	
	Train-ApEx	ApEx-Train
Line 1: Location of the pickup site and Line 6: Security situation at the pickup site.	3	5
Line 3: Number of patients by medical precedence and Line 8: Patient nationality and status.	5	0
Line 4: Special equipment and Line 9: NBC Contamination	**13**	**11**

Line 5: Number of patients by type and line 6: Security situation at the pickup site.	3	8
• *Unique*		

23. You are detailed to relieve the platoon leader's RTO. The 1st Squad is conducting an ambush in a draw 1000 meters West of the company's defensive position. While monitoring the radio you receive the following message from the 1st Squad: *"Mike 43 this is Golf 22. SPOT Report. Twenty-five (25) to thirty (30) man enemy patrol engaged on trail at PL366683. Soldiers in gray camouflage uniforms with leopard shoulder patches. Eighteen (18) enemy KIA, two (2) enemy WIA, two (2) EPWs, and one (1) friendly WIA. Enemy survivors escaped South. Withdrawing to your location, will MEDEVAC the wounded from that location. Estimated time of arrival, 20 minutes. Over."* What essential elements, if any, are missing to complete and forward this SPOT Report?	# Responses	
	Train-ApEx	ApEx-Train
No essential elements of information are missing from this SPOT report.	7	7
TIME and EQUIPMENT	**15**	**12**
SIZE and TIME	0	2
TIME and ACTIVITY	2	3
• *Unique*		

24. After getting clarification on the previous SPOT Report and the status of the wounded, the Platoon Leader writes up the MEDEVAC Request. He hands it to you and says, "Check it then send it." He turns his attention to getting 1st Squad safely back into the defensive position. His message reads: *"Kilo 87 this is Mike 43. MEDEVAC Request. Pickup site grid PL384677. Contact Mike 43 Alpha on 39.45. Green smoke available to mark. All require litter, 2 URGENT and 1 PRIORITY. No special equipment. EPW - 2 and U.S. Military - 1. No contamination, unit at MOPP 1. Over."* What essential element is missing to complete and forward this MEDEVAC Request?	# Responses	
	Train-ApEx	ApEx-Train
Patient nationalities, only the U.S. soldier is identified.	7	2
Blood type of the U.S. soldier, the data on his I.D. tags.	0	2
Security status, recent contact with a nearby enemy patrol was not reported.	**17**	**18**
Guard requirements, the specific condition of the enemy prisoners was not provided.	0	2
• *Unique*		

25. As the 1st Squad, with prisoners and wounded, approaches the passage point in the defensive obstacles it is fired on by an enemy force. The Platoon Leader takes the SPOT Report, then hands you the hand set. "Take the call for fire and pass it to the Company FIST." You copy the following message: "*Mike this is Golf 22. Suppression. From my location, direction 275 degrees, at a distance of 500 meters; 3 to 4 wheeled recon vehicles with heavy machineguns and 30 personnel with small arms in the wood line. My element pinned down. Over.*" What essential element is missing to complete this call for fire?	# Responses	
	Train-ApEx	ApEx-Train
The person requesting the mission.	4	0
* **The target location or the location of the 1st Squad.**	**13**	**18**
The desired method of engagement and type of rounds or fires to be used.	3	3
The size and shape of the target.	4	3
• *Unique*		

26. The SUPPRESSION mission was fired and the 1st Squad was able to break contact and move into the defensive position. The enemy withdrew. The 2nd Squad's OP is observing as the enemy tries to regroup and continue the attack. You copy the following message: "*Mike 43 this is Lima 22. FIRE FOR EFFECT. At grid PL375692; 4 wheeled recon vehicles with heavy machineguns, 3 wheeled armor personnel carriers, and 30 to 40 personnel in the woods. Over.*" What essential element, if any, is missing to complete this call-for-fire?	# Responses	
	Train-ApEx	ApEx-Train
* **No information is missing; relay the request.**	**13**	**14**
The desired method of engagement and type of rounds or fires to be used.	3	2
The location of the 2nd Squad OP.	6	5
The size and shape of the target.	2	3
• *Unique*		

27. Again, you hear the rounds overhead and the impact. The fore-for-effect mission found its mark. The 2nd Squad OP provides a battle damage assessment and tracks the withdrawal of the enemy force. You copy the following message: "*Mike 43 this is Lima 22. SPOT Report. At grid PL375692; 3 wheeled recon vehicles and 1 wheeled armor personnel carrier heavily damaged or destroyed. Estimate 20 to 25 enemy casualties. Observing 1 recon vehicle and 1 personnel carrier withdrawing rapidly to the Northwest. Time now. Over.*" What essential element, if any, is missing to complete this SPOT Report?	# Responses	
	Train-ApEx	ApEx-Train
No information is missing; relay the report.	6	4
No information on equipment is provided.	5	2
No information on symbols, vehicle markings, or unit identification is provided.	**10**	**18**
No status of enemy casualties is provided.	3	0
• *Unique*		

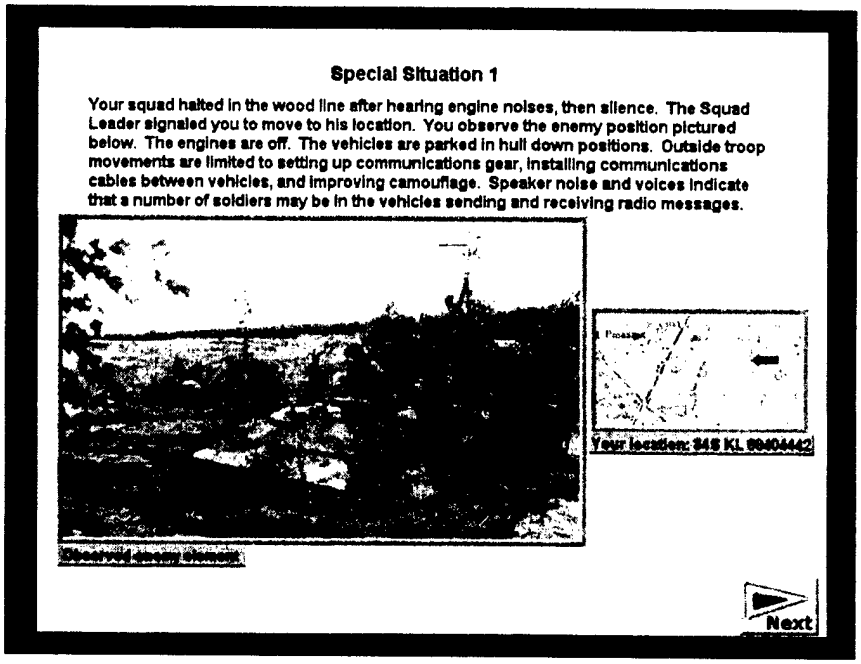
28. You hear incoming rounds and 6 to 8 explosions nearby. The platoon's chemical agent alarm positioned to the North begins to sound. As you mask and don your protective gear, you copy the following message: *"Mike 43 this is Papa 22. NBC-1 Report. On my position at grid PL380682; possible BLISTER AGENT delivered by 6 rounds of mortar fire. Surface bursts, delivered two minutes ago. Decontaminating and checking for casualties. Over."* What essential element, if any, is missing to complete this NBC-1 Report?	# Responses	
	Train-ApEx	ApEx-Train
* **No information is missing; relay the report.**	7	7
No azimuth to the attack location was provided.	8	8
The agent should be confirmed prior to forwarding the report.	3	1
The date and time that the attack ended should be provided.	6	8
• *Unique*		

29. The Platoon Sergeant comes into the Command Post. He has coordinated with the 3rd Platoon for an additional medic, who is moving to 3rd Squad to assist with chemical casualties. He hands you the MEDEVAC Request and tells you to review the message and transmit it while he loads up additional decontamination supplies. The message reads as follows: *" Kilo 87 this is Mike 43 Alpha. MEDEVAC Request. Grid Pl392681; Contact Papa 22 on 39.45. Two (2) Medical urgent, both require litter, and both US military. Violet smoke is available to mark pickup site. Over."* What essential element or elements, if any, are missing to complete this MEDEVAC Report?	# Responses	
	Train-ApEx	ApEx-Train
No information is missing; transmit the message.	3	2
The chemical agent should be confirmed prior to forwarding the request.	3	4
* **The presence of a chemical agent and recent attacks and enemy contact should be provided.**	7	9
The presence of a chemical agent and current MOPP status should be provided.	11	9
• *Unique*		

Appendix D
Item Analyses for Application Exercise

Table D-1
Mean Percent Correct on Application Exercise Questions

Item #	Message Type	Relationship to Training Program	Response Required	Experimental Condition		All Soldiers
				Train-ApEx	ApEx-Train	
1	General	In Training	General	100%	100%	100%
2	SPOT	In Training	Field Select	91%	81%	86%
3	SPOT	Not in Training	Menu-Select	26%	33%	30%
4	SPOT	Not in Training	Menu-Select	70%	30%	50%
5	SPOT	In Training	Menu-Select	29%	38%	33%
6	CFF	Not in Training	Field-Select	21%	21%	21%
7	CFF	Not in Training	Menu-Select	21%	29%	25%
8	CFF	Not in Training	Menu-Select	38%	63%	50%
9	CFF	Not in Training	Field-Select	33%	42%	38%
10	CFF	Not in Training	Menu-Select	17%	25%	21%
11	SPOT	In Training	Field-Select	67%	83%	75%
12	SPOT	Not in Training	Menu-Select	26%	67%	47%
13	SPOT	Not in Training	Menu-Select	33%	48%	40%
14	SPOT	Not in Training	Menu-Select	58%	75%	67%
15	SPOT	Not in Training	Menu-Select	67%	67%	67%
16	SPOT	Not in Training	Menu-Select	25%	58%	42%
17	General	In Training	General	96%	100%	98%
18	MEDEVAC	In Training	Field-Select	79%	83%	81%
19	MEDEVAC	Training Plus	Menu-Select	38%	50%	44%
20	MEDEVAC	Training Plus	Menu-Select	29%	44%	36%
21	MEDEVAC	Training Plus	Menu-Select	67%	75%	71%
22	MEDEVAC	Training Plus	Field-Select	38%	50%	44%
23	MEDEVAC	Training Plus	Field-Select	42%	25%	33%
24	MEDEVAC	Training Plus	Menu-Select	67%	25%	46%
25	MEDEVAC	Training Plus	Menu-Select	13%	13%	13%
26	CFF	Training Plus	Menu-Select	33%	54%	44%
27	CFF	Training Plus	Menu-Select	21%	33%	27%
28	CFF	Not in Training	Menu-Select	25%	39%	32%
29	CFF	Not in Training	Menu-Select	75%	83%	79%
30	CFF	Not in Training	Menu-Select	57%	58%	57%



1. Your squad leader wants you to send a message reporting the enemy activity. Which message should you send?	# Responses	
	Train-ApEx	ApEx-Train
* **Spot report**	**23**	**24**
Call for Fire	0	0
MEDEVAC	0	0
NBC-1	0	0

- *In message training*
- *One nonresponse in Train-ApEx condition*

2. You decide to sent a Spot Report in the SALUTE format. Based on your observations, which field of the report can be used to report the type of vehicle observed? *[SALUTE format displayed]*	# Responses	
	Train-ApEx	ApEx-Train
* **Equipment**	**21**	**17**
Activity	1	3
Speed	0	0
Course	1	1

- *In message training*
- *One nonresponse in Train-ApEx; three nonresponses in ApEx Train.*

3. You select the Equipment data field. Which type of equipment, listed below, best describes the vehicles that you are observing? *[SALUTE format displayed]*	# Responses	
	Train-ApEx	ApEx-Train
Field Artillery	1	3
Tank	10	10
Utility Vehicle	3	1
* **APC**	**5**	**7**

- *Not in message training.*
- *5 nonresponses in Train-ApEx; three nonresponses in ApEx-Train.*
- *Must know the function or type of vehicles shown in the picture (APC- BMP). Soldiers may not understand the terms APC or utility vehicle.*

4. You select the Activity data field. Which types of activity. Listed below, best describes the activity being taken by the enemy elements that you are observing. *[SALUTE format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
No Activity	1	0
Assembling	6	10
* **Stationary**	**16**	**7**
Fortifying	0	6

- *Not in message training.*
- *One nonresponse each in Train-ApEx and ApEx-Train.*
- *Must determine type of activity and recall/comprehend the situation description. Soldiers may find it difficult to relate the type of activity shown to the list of words in the LW menu.*

5. You and your squad leader have observed the enemy position and nearby area for 5 minutes. No other significant activity has been observed. Which time should be entered in the DTG (date/time group) data field of the report? [SALUTE format shown.]	# Responses	
	Train-ApEx	ApEx-Train
The date and time that the squad leader initially observed the enemy	10	6
The date and time that you observed the enemy	6	8
* **Now**	**7**	**9**
The date and time that you estimate the enemy arrived in position.	1	1

- *In message training.*

6. You transmit the SALUTE report and receive a quickly response from your platoon leader. The S2 has identified the enemy unit as the command/observation post for an enemy artillery battalion. Your squad is to initiate the "Call for Fire." What data field or fields on the Call for Fire message are used to provide "Target Description and Activity?" *[CFF format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Type of mission	3	2
Target location and equipment	15	17
* **Equipment and protection level**	**5**	**5**
Protection level	1	0

- *Not in message training.*
- *Equipment field included in message training. But "Protection level" not directly covered. Could be easily confused by the soldier to mean the friendly force versus enemy force protection. Soldier must also understand and/or recall that location is a separate field in the CFF; that" target description and activity" by doctrine does not include target location. Target location is a separate element.*

7. You select the Equipment (Target) data field. Which type of equipment, listed below, best describes the enemy element that you are observing? *[CFF format shown.].*	# Responses	
	Train-ApEx	ApEx-Train
Undefined	2	0
* **Command Center**	**5**	**7**
Vehicles	6	8
Armor, Combat	11	9

- *Not in message training.*
- *Must recall stem of previous question, which refers to the command/observation post for enemy artillery battalion.*
- *Soldier may not relate the type of activities described to a Command Center, nor necessarily perceive the relevance of a "Command Center" to types of equipment.*

8. You select the Protection Level data field. Which protection level, listed below, best describes the enemy element that you are observing? *[CFF format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Cover	9	5
Prone/Overhead cover	2	1
* **Prone/ Dug-in**	**9**	**15**
Prone/Standing	4	3

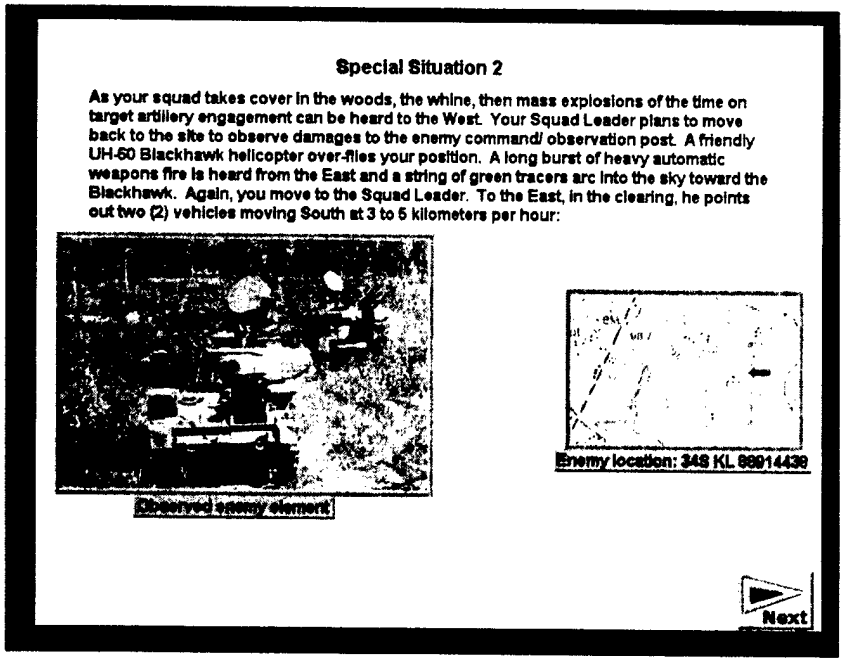
- *Not covered in message training.*
- *Soldier must interpret the scenario description and the picture, which includes both people and vehicles. Must understand the levels of associated protection with the terms provided.*

9. Your squad leader tells you to transmit the Call for Fire as soon as possible. However, he wants to delay the engagement. He estimates that it will require five (5) minutes for the squad to move West, away from the target, to a better-covered position. Which data field permits you to specify a later time for the artillery attack? *[CFF format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Type of mission	3	5
Protection level	8	6
* **Method of control**	**8**	**10**
The time of the attack cannot be delayed or specified	5	3

- *Not in message training.*
- *"Method of control" terminology was not used in the prerequisite training. However, the available options are distinct; soldier could use process of elimination to determine the correct answer.*

10. You select the Method of Control data field. Which method of control, listed below, best describes the means that your squad leader desires to use to control the artillery fire mission? *[CFF format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
* **Timed time on target**	**4**	**6**
Timed when ready	6	6
Fire when ready	4	2
At my command	16	10

- *Not in message training, as is not a standard CFF term in current doctrine.*
- *Soldier must recall stem in prior question (#9) – the reference to the squad leader estimating 5 minutes for his squad to move away from the target, which implies in 5 minutes.*



11. The squad leader directs you to send an immediate report on this activity. When data fields in the SALUTE message should be used to report the activity of this enemy element? *[SALUTE format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Speed and Course	2	2
Activity and Speed	2	1
Activity and Course	4	1
* **Activity, Speed and Course**	**16**	**20**

- *Covered in message training.*

12. You select the Speed data field. Which selection, listed below, best describes the movement of the enemy element you are observing? *[SALUTE format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Fast	4	1
Medium	8	5
None	5	2
* **Slow**	**6**	**16**

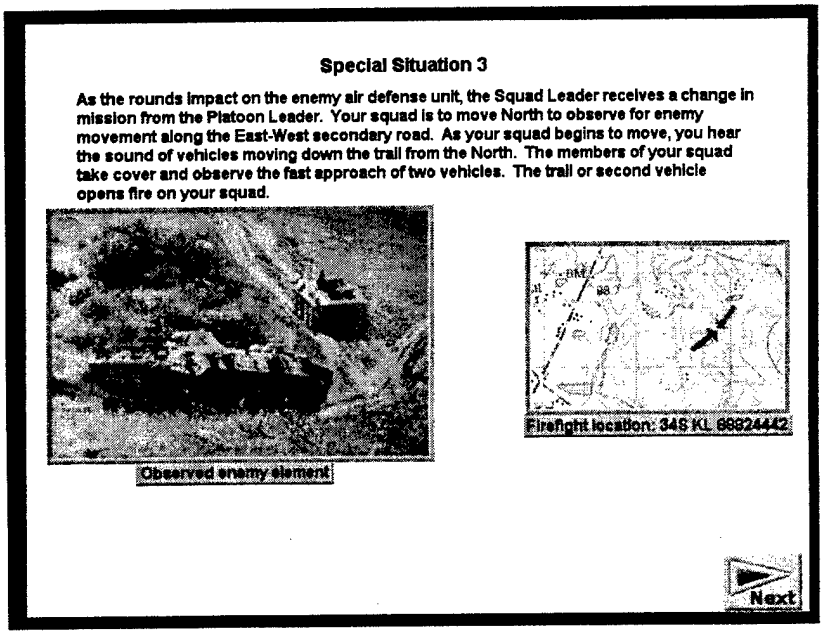
- *Not in message training.*
- *One nonresponse in Train-ApEx.*
- *Must determine what slow means. Either recall or refer back to the situation description where 3-5 mph is cited. However, no standards can be determined for "slow," "medium" or "fast."*

13. You select the Course data field. Which selection, listed below, best describes the actions of the enemy element that you are observing? *[SALUTE format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
* **South**	**8**	**11**
Southeast	5	2
Southwest	2	1
East	9	9

- *Not in message training.*
- *One nonresponse in ApEx-Train.*
- *Answer clearly indicated in last line of situation. If soldier did not recall, should have gone back to the situation description. "East" is mentioned twice in the description, but not in the context of enemy vehicle direction. Soldier must read description carefully, not quickly searching for any word that indicates a direction.*

14. As you complete the SALUTE message, you open the Equipment data field. Which selection, listed below, best describes the type of enemy equipment you are observing? *[SALUTE format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Tank	3	4
* **Air Defense Artillery**	**14**	**18**
Utility Vehicle	5	0
Field Artillery	2	2

- *Not in message training.*
- *ZSU shown (Air Defense Artillery vehicle). Soldier needs vehicle identification skills to answer. Could also infer correct answer from the description that indicated a Blackhawk helicopter was shot at.*



15. In the firefight that developed, your squad stopped the two (2) vehicles with antitank fires. Both vehicles produce multiple explosions and are on fire. There are 16 enemy soldiers killed in action (KIA) and 3 enemy wounded. As you prepare your SALUTE message, you open the Activity data field. Which category, from the list below, best describes the enemy unit you observed? *[SALUTE format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
* **Destroyed**	**16**	**16**
Stationary	0	0
Engaging	8	7
Defending	0	1

- *Not in message training.*
- *Answer must be inferred from the question stem; not the situation picture and description.*

16. You continue to complete the SALUTE message based on the firefight with the enemy unit. In the Equipment 1 (Target) data field you selected "APC" and entered a "2" in the Quantity data field. What should you enter in the Equipment 2 data field? [SALUTE format shown.]	# Responses	
	Train-ApEx	ApEx-Train
Antitank rocket launcher	6	4
Utility vehicle	10	3
Field Artillery	2	3
* **Infantry**	**6**	**14**

- *Not in message training.*
- *Soldier could deduce Infantry as the correct answer by process of elimination, if he recognizes that the vehicles are APCs and understands the situation description?*
- *Soldier may not answer "Infantry" as he may not perceive troops as a type of equipment.*

17. After sending the SALUTE message, the Squad Leader informs you that in addition to the three (3) enemy wounded, two (2) of your squad members are wounded. All wounded must be carried out of the area. What message format should be used to request evacuation of the wounded enemy soldiers?	# Responses	
	Train-ApEx	ApEx-Train
Spot report	0	0
Call for fire	1	0
* **MEDEVAC**	**23**	**24**
NBC-1	0	0

- *In message training.*

18. The Squad Leader directs you to prepare a MEDEVAC message. The Platoon Leader has the 1st Squad securing an aircraft landing zone at 34S KL 88384403. The 3rd squad will assist in transporting all wounded from 34S KL 88824442 to the aircraft landing zone location. In which data field should the grid for the aircraft landing zone be entered? *[MEDEVAC format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
* **Pickup location**	**19**	**20**
Marking	2	0
Security	1	2
MEDEVAC priority	2	2

- *In message training.*

19. You select the Security data field. Based on the known enemy activity in the area, which category, from the list below, best describes the security at the Pickup site? *[MEDEVAC format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
* **Enemy in the area – Use caution**	**9**	**12**
No enemy	4	3
Possible enemy	11	7
Undefined	0	2

- *In message training.*
- *Must also be able to comprehend the situation description. Infer that although vehicles are destroyed, enemy is present. Could require a level of military understanding generally beyond advanced training for new soldiers.*

20. All casualties have been examined and given initial treatment. The medic indicates that one (1) enemy soldier requires immediate surgery and the other four (4) wounded are stable. However, they need professional medication attention in 4 to 6 hours. You select the MEDEVAC Priority data field. Which category, from the list below. Best describes the medical precedence of this evacuation request. *[MEDEVAC format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Priority	15	13
Routine	2	0
Undefined	0	1
* **Urgent**	**7**	**10**

- *In message training.*
- *Soldier must understand that "priority" is the label used instead of "precedence" for the field.*
- *Immediate surgery for a prisoner of war may not be understood as urgent.*

21. You select the NBC Contamination type data field. Which category, from the list below, best describes the hazard that the wounded will create for the MEDEVAC aircraft and the medical treatment unit? *[MEDEVAC format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Biological	1	2
Chemical	6	4
* **None**	**16**	**18**
Radiation	1	0

- *In message training.*
- *No NBC contamination cited in the situation description.*

22. From the items listed below, what additional data are required for you to complete the information required in the digital MEDEVAC message format? *[MEDEVAC format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Patient Nationality and Status	5	5
Special Equipment Required	9	1
Terrain Description for the Pickup Site	1	6
* **Method of Marking the Pickup Site**	**9**	**12**

- *In message training.*
- *Must cross-walk fields with required MEDEVAC elements discussed in the training*
- *Question stem may not be clear to all. Could be interpreted to mean any other elements needed such as special equipment.*
- *High literacy level required.*

23. The digital MEDEVAC message format does not require all data elements normally transmitted in a voice/radio MEDEVAC request. Which data element listed below would normally be included in the voice/radio transmission that is not required for the digital message? *[MEDEVAC format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Blood type, if immediate transfusion is required	2	6
* **Special equipment required**	**10**	**6**
Required medical or surgical procedures	5	8
Hazards to flight at or near the pickup site	7	4

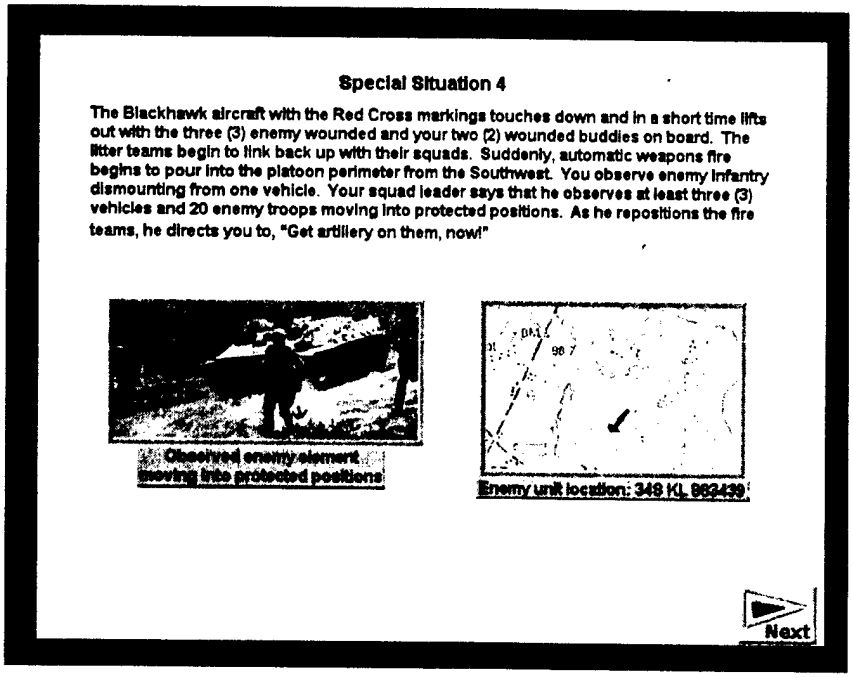
- *In message training.*
- *Must determine what is normally required but not in the digital format.*
- *Order of data presentation on the graphical user interface adds to difficulty.*

24. The Squad Leader informs you that 1st Squad has marked the aircraft pickup zone with VS-17 signal panels in a "T." What additional information is required to complete the MEDEVAC request? *[MEDEVAC format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Direction or orientation of the "T"	4	8
* **Color of the panels**	**16**	**6**
Wind direction at the pickup zone	1	2
Diameter of the pickup zone	3	8

- *In message training.*
- *Need to recall the training. Other response options not mentioned in the training.*
- *Soldier's knowledge of what a VS-17 signal panel is and how it is used may be limited.*

25. The 3rd Squad has arrived at your location to assist in securing the movement to the pickup site and transporting the wounded. All five (5) patients must be carried and the medic has reported that the one (1) enemy soldier requires immediate surgery and the other four (4) wounded are stable, but required professional medical attention in 4 to 6 hours. What data would you enter in the Amb Patients and Ltr Patients data fields? *[MEDEVAC format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Amb Patients: 5	1	1
Amb Patients: 1 Ltr Patients: 4	14	15
Amb Patients: 4 Ltr Patients: 1	6	5
* **Ltr Patients: 5**	**5**	**3**

- *In message training.*
- *Soldier must infer from the description that "wounded" and "must be carried" means litter.*



26. You open the Call for Fire message format and enter the enemy unit location in the Target Location data field. You then select the Equipment Target data field. Which category, from the list below, best describes the enemy unit you are about to engage? *[CFF format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Weapons	1	0
Vehicles	7	3
* **Armor, Combat**	**8**	**13**
Personnel	8	8

- *In message training.*
- *Soldier must infer which has higher priority – Armor (combat) or personnel.*
- *Must also distinguish between armor and vehicles in importance and know type of vehicle shown in picture.*

27. What number should be entered in the unlabeled data field to the right of the Equipment Target data field? *[CFF format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
* **3**	**5**	**8**
6	6	2
20	10	9
23	3	5

- *In message training.*
- *Correct answer dependent on soldier's response to prior Item #26.*

28. You select the Protection Level data field. What category, from the list below, best describes the enemy unit you are about to engage? *[CFF format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
* **Cover**	**6**	**9**
Prone/Dug-in	2	2
Prone/Standing	85	7
Unknown	8	5

- *Not in message training.*
- *One nonresponse in ApEx-Train condition.*
- *Must know the difference between cover, dug-in, etc.*

29. You select the Method of Control data field. Which category of control, from the list below, best describes your Squad Leader's intent for the fire mission on the enemy unit? *[CFF format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Timed time on target	0	0
* **Fire when ready**	**18**	**20**
Cannot observe	2	0
At my command	4	4

- *Not in message training.*
- *Method of control not in the message training.*
- *Answer inferred from description that says "Get artillery on them now."*
- *Terms used in menu selections are generally beyond the military experience of most advanced individual training graduates.*

30. You prepare to complete the Time on Target (ZULU) data field. Which information, from the list below, best describes your Squad Leader's intent for the fire mission on the enemy unit? *[CFF format shown.]*	# Responses	
	Train-ApEx	ApEx-Train
Enter the current time	5	3
Enter the time that the enemy unit was initially observed	4	5
* **Select the "Now" button**	**13**	**14**
Enter the time the rounds are desired on target.	1	2

- *Not in message training.*
- *One nonresponse in Train-ApEx condition.*
- *The Time on target (ZULU) data field is generally beyond the military experience of advanced individual training graduate.*